



Serving the World of Chemical Analysis

October 16-17, 2018

Moody Gardens Convention Center
Galveston, Texas

GulfCoastConference.com

PROGRAM

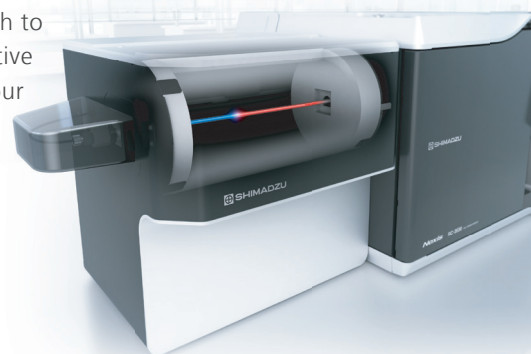


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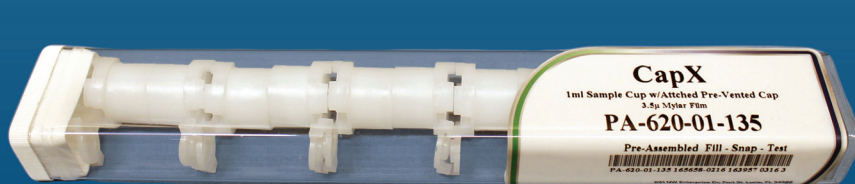
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Welcome to the 2018 Program - The 115th meeting of the GCC
Moody Gardens Convention Center
One Hope Blvd
Galveston, Texas, 77554

2018 Conference Schedule

Monday, October 15, 2018

7:00 PM – 10:00 PM – Golf Awards Banquet
Moody Gardens Poolside
Inclement Weather Moody Ballroom

Tuesday, October 16, 2018

9:00 AM – 5:00 PM – Exhibits
9:00 AM – 5:00 PM - Technical Sessions
3:30 PM - 5:00 PM - Tuesday's Social
(Exhibit Hall Center)
9:00 PM - 5:00 PM - New Product Showcase
9:00 AM – 5:00 PM - Poster Sessions

Wednesday, October 17, 2018

9:00 AM – 5:00 PM – Exhibits
9:00 AM – 5:00 PM - Technical Sessions
9:00 PM - 5:00 PM - New Product Showcase
9:00 AM – 5:00 PM - Poster Sessions



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2018"

Gulf Coast Conference
13921 Hwy 105 West #163
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Conference Sponsors

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Booth # 309

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Booth # 503



Shimadzu is the leading provider of analytical measurement and testing instrumentation for a broad range of applications in science and industry, including foods, pharmaceuticals, life science, environmental, chemicals, and forensics. Our extensive portfolio of high-quality system platforms provides customers with unparalleled solutions-based offerings and we encourage results-driven collaborations that meet growing customer demands. Instruments include chromatographs, mass spectrometers, spectrophotometers, atomic spectrometers, X-ray spectrometers, thermal & particle size analyzers; Total Organic Carbon analyzers; data systems/software; balances; and materials testers.

Booth # 403



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Booth # 411

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Booth # 913



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Visit Agilent at booth 503

New Product Showcase

The 2018 Gulf Coast Conference will again sponsor the New Product Showcase event to provide a forum for the introduction of new technology and innovation to our attendees. On Tuesday and Wednesday of the show there will be special table top displays with new products and technology for your examination. Eleven Exhibitors will provide these products and personnel to describe them during specific times in the central lounge area of the exhibit hall.



POWERED by INNOVATION



Mission Statement

To provide GCC attendees with news, technical & business information which will educate about the petrochemical, refining, environmental, and industrial hygiene fields and professions." The Gulf Coast Conference program will focus on the industry trends and news, regulatory activities, technical information, and the successful implementation of various technical & business methodologies important to those professions. Conference business, events and activities will also be communicated. Opinions, claims, conclusions and positions expressed in this publication are the authors' or persons quoted and do not necessarily reflect the opinions of the editor, GCC or the Gulf Coast Conference Program.

2018 CONFERENCE SCHEDULE

TUESDAY

KEYNOTE SPEAKER



"Tapping the Vast Resources of New Chromatographic Realms"

Dr. Christopher Reddy - Woods Hole Oceanographic Institution

11:00 AM - 11:40 AM - Exhibit Hall A4 Room - 10/16/2018 - Abstract# 261

Agilent Workshop

Abstract# 231 - 10/16/2018 09:00 AM - 9:30 AM - Floral Hall A 1 Room

How to be Compliant with EPA Requirements for ASTM Method D5769 Total Aromatics in Gasoline
Fred Feyerherm - Agilent Technologies

Abstract# 215 - 10/16/2018 09:30 AM - 10:00 AM - Floral Hall A 1 Room

Tips and Tricks for OpenLab's CDS'
Kathleen O'Dea - Agilent Technologies

Abstract# 216 - 10/16/2018 10:00 AM - 10:30 AM - Floral Hall A 1 Room

ICP-MS and ICP-OES Maintenance, Troubleshooting – Tips and Tricks
Mark Kelinske - Agilent Technologies

Abstract# 217 - 10/16/2018 01:30 PM - 2:00 PM - Floral Hall A 1 Room

Progress Update of Two proposed ASTM methods on Elemental Analysis of Biodiesel and Crude Oil by Microwave Plasma Atomic Emission Spectrometry (MP-AES)
Jenny Nelson - Agilent Technologies

Abstract# 224 - 10/16/2018 02:00 PM - 2:45 PM - Floral Hall A 1 Room

Running ASTM Methods on the Agilent Intuvo Gas Chromatograph
James McCurry - Agilent Technologies

7th Annual Micro & Fast Gas Chromatography Symposium

Abstract# 164 - 10/16/2018 01:00 PM - 1:20 PM - Tulip Room

Ultrafast Gas Chromatography: The Journey to Credibility
John Crandall - Falcon Analytical

Abstract# 169 - 10/16/2018 01:20 PM - 1:40 PM - Tulip Room

Optimizing Gas Chromatography
Brian Rohrbach - Infometrix

Abstract# 168 - 10/16/2018 01:40 PM - 2:00 PM - Tulip Room

Chromperfect: Peak Integration? Of course but Automation, Software and Data Integration Too!
George Schreiner - ChromPerfect

Abstract# 167 - 10/16/2018 02:00 PM - 2:20 PM - Tulip Room

Ultrafast Simulated Distillation in the Refinery Laboratory: The Skeptics become the Believers
Shauna Teclerian - US Oil Refining

Abstract# 266 - 10/16/2018 02:20 PM - 2:40 PM - Tulip Room

What Can Be Done: 2, 4, 8 & 16 Meter Column Modules?
Derrick Saul - Falcon Analytical

Abstract# 165 - 10/16/2018 02:40 PM - 3:00 PM - Tulip Room

When Length Alone Isn't Enough: A Novel Two Module, Three Column Configuration (patent pending) for H₂, O₂, N₂ and Hydrocarbons
Nathan Caton - Individual

Abstract# 166 - 10/16/2018 03:00 PM - 3:20 PM - Tulip Room

Parts per Million, Parts per Billion, How about Parts per Trillion?
Matt Holliday - Falcon Analytical

Leco Multi-Dimensional Chromatography Gas Workshop

Abstract# 155 - 10/16/2018 09:00 AM - 9:20 AM - Jasmine Room

A Comparison of Thermal and Flow Modulated GCxGC with dual FID-MS for Aviation Fuels
Richard Striebich - University of Dayton Research Institute, Linda Shafer - University of Dayton Research Institute, Zachary West - University of Dayton Research Institute, Steve Zabarnick - University of Dayton Research Institute

Abstract# 148 - 10/16/2018 09:20 AM - 10:00 AM - Jasmine Room

Advances / Applications of Separations in the Mass Spectral

2018 CONFERENCE SCHEDULE

TUESDAY

Characterization of Petroleum

Ryan Rodgers - National High Magnetic Field Laboratory, Jie Lu - National High Magnetic Field Laboratory, Steve Rowland - National High Magnetic Field Laboratory, Donald Smith - National

High Magnetic Field Laboratory, Martha Chacon - National High Magnetic Field Laboratory, Rebecca Ware - National High Magnetic Field Laboratory, Alan Marshall - Florida State University, Sydney Niles - Florida State University

Abstract# 129 - 10/16/2018 10:00 AM - 10:30 AM - Jasmine Room

GCxGCxMS of Diesel: A Three-Dimensional Separation Approach
Frank Wang - Exxonmobil Research and Engineering Co.

Abstract# 150 - 10/16/2018 01:00 PM - 1:40 PM - Jasmine Room

Comprehensive Two-dimensional Gas Chromatographic (GCxGC) Petroleum Fingerprinting Utilizing Traditional and Non-traditional Biomarkers and High Resolution Time of Flight Mass Spectrometry Petroleomics Spectral Analysis Tools
Robert Nelson - Woods Hole Oceanographic Institution, Christopher Reddy - Woods Hole Oceanographic Institution

Abstract# 212 - 10/16/2018 01:40 PM - 2:10 PM - Jasmine Room

Characterizing Stationary Phases for GC x GC with Representative Probes
Bill Winniford - The Dow Chemical Company, Raymond Jaramillo - Penn State University, Matthew Klee - XO Associates, Frank Dorman - Penn State University

Abstract# 221 - 10/16/2018 02:10 PM - 2:30 PM - Jasmine Room

A Comparison of PAH Levels in Used Engine Oils by GC-TOFMS and GCxGC TOF-MS
Christina Kelly - LECO Corporation, Joseph Binkley - LECO Corporation, Lorne Fell - LECO Corporation

Metrohm Seminar

Abstract# 186 - 10/16/2018 10:00 AM - 10:30 AM - Wisteria Room

Combatting Corrosion in Refineries: Using Ion Exclusion Chromatography to measure Free Cyanide in Sour Water
Jay Sheffer - Metrohm USA

Abstract# 188 - 10/16/2018 10:30 AM - 11:00 AM - Wisteria Room

Simple, Efficient Petrochemical Analysis with NIR and Raman Spectroscopy
Adam Hopkins - Metrohm USA, Raghvendra Sengar - Metrohm USA

Abstract# 190 - 10/16/2018 01:30 PM - 2:00 PM - Wisteria Room

Fast Hydroxyl Number Analysis
Kerri-Ann Blake - Metrohm USA

Abstract# 191 - 10/16/2018 02:00 PM - 2:30 PM - Wisteria Room

Moisture Analysis of Solids, Liquids and Gases
Kerri-Ann Blake - Metrohm USA, Lori Spafford - Metrohm USA

Shimadzu Workshop

Abstract# 230 - 10/16/2018 09:00 AM - 9:20 AM -

Floral Hall A 2 Room

Multivariate approach to on-line supercritical fluid extraction – supercritical fluid chromatography - mass spectrometry method development
Allison Paige Wicker - The University of Texas at Arlington

Abstract# 254 - 10/16/2018 09:20 AM - 9:40 AM - Floral Hall A 2 Room

Comprehensive Environmental Testing of Groundwater Quality in the Alpine High Region
Hailee Anderson - The University of Texas at Arlington

Abstract# 239 - 10/16/2018 09:40 AM - 10:00 AM - Floral Hall A 2 Room

MALDI-TOF-MS fingerprinting of Friction Reducers
Dino Camdzic - University of Texas at Arlington

Abstract# 240 - 10/16/2018 10:00 AM - 10:20 AM - Floral Hall A 2 Room

Characterization of Benzene, Toluene, Ethylbenzene, and Xylenes within Friction Reducers using Headspace-Gas Chromatography-Mass Spectrometry-Vacuum Ultraviolet Spectroscopy
Robert Magnuson II - University of Texas at Arlington

Abstract# 241 - 10/16/2018 10:20 AM - 10:40 AM - Floral Hall A 2 Room

Differentiation of Phthalate Esters through Gas Chromatography- Vacuum Ultraviolet Spectroscopy with Isomeric Resolution
Michelle Reyes - University of Texas at Arlington

Abstract# 252 - 10/16/2018 01:00 PM - 1:30 PM - Floral Hall A 2 Room

Improved ICP Performance of High-Solids Samples: Increase Precision and Decrease Downtime
Justin Masone - Glass Expansion, Inc

Abstract# 242 - 10/16/2018 01:30 PM - 2:00 PM - Floral Hall A 2 Room

Improved ICP Performance with Precise Temperature Control for Petrochemical Applications
Justin Masone - Glass Expansion Inc

Abstract# 247 - 10/16/2018 02:00 PM - 2:30 PM - Floral Hall A 2 Room

Elemental Analysis: Choosing the Right Technique
Jon Peters - Shimadzu Scientific Instruments, Inc.

Abstract# 243 - 10/16/2018 02:30 PM - 3:00 PM - Floral Hall A 2 Room

The Next Industry Standard in Mass Spectrometry Hardware
Jeff Werner - Shimadzu Scientific Instruments, Inc.

Abstract# 244 - 10/16/2018 03:00 PM - 3:30 PM - Floral Hall A 2 Room

Total Organic Carbon Analysis: Factors That Influence Analytical Results
Ricky Frnka - Shimadzu Scientific Instruments, Inc.

Abstract# 257 - 10/16/2018 03:30 PM - 4:00 PM - Floral Hall A 2 Room

ASTM D7798 Fast SimDis Analysis using Shimadzu Nexis GC-2030 and the Valco Fast Temperature Program module
Ryo Takechi - Shimadzu Scientific Instruments, Inc.

Abstract# 245 - 10/16/2018 04:00 PM - 4:30 PM - Floral Hall A 2 Room

Analysis of the ARC Jetanizer for CO₂ and CO In-jet

2018 CONFERENCE SCHEDULE

TUESDAY

Methanization on Shimadzu Gas Chromatographs
Allison Mason - Shimadzu Scientific Instruments, Inc.

Thermo Workshop

Abstract# 192 - 10/16/2018 09:00 AM - 9:50 AM - Orchid Room
Microspectroscopic Sampling – FT-IR and Raman Microscopy
Steve McQueen - Thermo Fisher Scientific

Abstract# 189 - 10/16/2018 10:00 AM - 11:00 AM - Orchid Room
FTIR /Raman Theory and Sample Handling
Cam MacIsaac - Thermo Fisher Scientific

Abstract# 195 - 10/16/2018 01:00 PM - 2:00 PM - Orchid Room
FT-IR Spectral Interpretation and Problem Solving
Dr. Robert Jones - Thermo Fisher Scientific

Abstract# 198 - 10/16/2018 02:10 PM - 3:30 PM - Orchid Room
Omic Software Tutorial for IR/Raman Spectroscopy
Cam MacIsaac - Thermo Fisher Scientific, Dr. Robert Jones - Thermo Fisher Scientific

Fast Gas Chromatography

Abstract# 142 - 10/16/2018 09:00 AM - 9:20 AM - Exhibit Hall A4 Room
Extended Analysis of Natural Gas using a Micro GC
Vince Giarrocco – INFICON

Abstract# 127 - 10/16/2018 09:20 AM - 9:40 AM - Exhibit Hall A4 Room
Sulfur in Natural Gas
Christina Heacock – INFICON

Abstract# 157 - 10/16/2018 09:40 AM - 10:10 AM - Exhibit Hall A4 Room
Analysis of low hydrocarbon mixture from C1 to C5 by Gas Chromatography with Valco on-column heating technology in 20 seconds
Dale Ashworth - Valco Instruments Co. Inc., Huamin Cai - Valco Instruments Co. Inc., Martin Brisbin - Valco Instruments Co. Inc., Chris Bishop - Valco Instruments Co. Inc., Matias Hochman - Valco Instruments Co. Inc., Robert Simpson - Valco Instruments Co. Inc., Yashas Rathod - Valco Instruments Co. Inc., Doug Dailey - Valco Instruments Co. Inc., Marcus Pereira - Valco Instruments Co. Inc., Stanley Stearns - Valco Instruments Co. Inc.

Spectrophotometry & Spectroscopy

Abstract# 185 - 10/16/2018 01:00 PM - 1:25 PM - Exhibit Hall A4 Room
Process Raman Gas Analysis in Refining-Update
Susan Harris - Endress+Hauser

Process & Mass Spectrometers

Abstract# 121 - 10/16/2018 01:25 PM - 1:45 PM - Exhibit Hall A4 Room
Corrosion control and chemically inert nanocoatings for use in

the refining, petrochemical and analytical equipment industries.
Gary Barone - SilcoTek Corporation.

QA/QC

Abstract# 262 - 10/16/2018 01:45 PM - 2:15 PM - Exhibit Hall A4 Room
Octane Engine Testing Made Easier- The Latest in XCP Technology for Octane Measurement, Documentation and Automation
Joseph Lange - CFR Engines Inc.

Titration

Abstract# 248 - 10/16/2018 02:15 PM - 2:35 PM - Exhibit Hall A4 Room
Challenges of Non-aqueous Automated Titrations in the Chemical Industry
Ana Nunez - Dow Chemical

Process & Mass Spectrometers

Abstract# 123 - 10/16/2018 02:35 PM - 3:05 PM - Exhibit Hall A4 Room
Transferring Routine Lab GC Analysis to Automatic On-Line Measurement
Ulrich Gokeler - Siemens Industry, Inc.

Chromatography

Abstract # 267 -10/16/2018 - 3:05 PM - 3:30 PM - Exhibit Hall A4 Room
Determination of Olefins in Condensates and Upgraded Bitumen by Gas Chromatography (GC) using a Vacuum Ultraviolet (VUV) Detector
Chris Goss - Innotech Alberta
Amanda Prefontaine - Innotech Alberta
Lee Marotta - PerkinElmer
Leeman Bennington - PerkinElmer

Gas, Oil & Pet Applications

Abstract# 144 - 10/16/2018 09:00 AM - 9:20 AM - Daffodil Room
Digital Copper corrosion measurement vs. Visual rating _ Incorporating new technologies to method development
Aaron Mendez - Analytical Instruments, Juan Ayala - Analytical Instruments

Abstract# 214 - 10/16/2018 09:20 AM - 9:45 AM - Daffodil Room
Measuring Corrosive gasses using Gas Chromatography (GC) techniques in pipeline products
Chris Goss - Innotech Alberta, Lee Marotta - Perkin Elmer, Amanda Prefontaine - Innotech Alberta

Abstract# 237 - 10/16/2018 09:45 PM - 10:10 PM - Daffodil Room
Olefin Content in Fuels by ASTM D8071
Jean-Francois Borny - McDermott Technology

Abstract# 125 - 10/16/2018 10:10 AM - 10:35 AM - Daffodil Room
Importance of Analytical Technology Throughout the SABIC Value Chain
Christian Wold – SABIC

2018 CONFERENCE SCHEDULE

TUESDAY

GC/MS

Abstract# 113 - 10/16/2018 10:35 AM - 10:55 AM - Daffodil Room

Analysis of Acrylic Adhesives Using Pyrolysis-GC/MS
Itsuko Iwai - Frontier Lab, Terry Ramus - Diablo Analytical, Rojin Belganeh - Frontier Laboratories, Robert Freeman - Frontier Laboratories

Abstract# 116 - 10/16/2018 01:00 PM - 1:20 PM - Daffodil Room

Novel Quantitation Method Development for Asphaltene Inhibitor Analysis Using Pyrolysis GC-MS and MS/MS
Lei (Lyla) Cheng - Ecolab, Tim Bonner - Ecolab, Christopher Durnell - Ecolab, Casado-Rivera Emerilis - Ecolab

Abstract# 110 - 10/16/2018 01:20 PM - 3:20 PM - Daffodil Room

The Pyrolysis Workshop
Terry Ramus - Diablo Analytical, Itsuko Iwai - Frontier Laboratories, Rojin Belganeh - Frontier Laboratories

Abstract# 183 - 10/16/2018 09:00 AM - 9:20 AM - Iris Room

Limit of detection for Sulfur in Aromatic matrices
Robbert Van Wessel - PAC LP

Abstract# 104 - 10/16/2018 09:20 AM - 9:50 AM - Iris Room

The Analysis of contaminants in Petroleum Products
Michael Pohl - HORIBA Instruments, Inc.

Abstract# 181 - 10/16/2018 09:50 AM - 10:10 AM - Iris Room

Analysis of Fuels by ICPOES - Avio200
Robert Forester - PerkinElmer

Abstract# 263 - 10/16/2018 10:10 AM - 10:40 AM - Iris Room

HDXRF vs. ICP for Nickel and Vanadium in Crude Oil – A Faster Alternative to ICP
Leslie Johnson - XOS

Abstract# 124 - 10/16/2018 01:00 PM - 1:30 PM - Iris Room

Analytical Improvements of HRVOC Flare and Cooling Tower Measurement
Ulrich Gokeler - Siemens Industry, Inc.

Abstract# 130 - 10/16/2018 01:30 PM - 1:50 PM - Iris Room

Analysis of Gums and Distillation Residues of Gasoline for Increased Accuracy of Particulate Emissions Prediction
Justin Pletzke - General Motors, Emily Popp - General Motors, Alex Bonkowski - General Motors, Jessica McGahan - General Motors, Mark Winston-Galant - General Motors

Abstract# 235 - 10/16/2018 01:50 PM - 2:35 PM - Iris Room

Gas Phase Spectroscopic Analysis of Volatile Hydrocarbons and Fuels using a New Fourier Transform Infrared (FTIR) Hyphenated Technique
Cory Schomburg - PerkinElmer, Inc.

Abstract# 154 - 10/16/2018 02:35 PM - 3:35 PM - Iris Room

Method Development and Validation Strategy for The Karl Fischer Titration Process
Bruce Herzig - MilliporeSigma

Abstract# 137 - 10/16/2018 09:00 AM - 2:00 PM - Hibiscus Room

Gas Chromatography Made Easy
Dr. Lee Polite - Axion Analytical Training Labs
Training Course: 3 Hours
Begin 9:00 AM - 11:00 AM
Lunch Break
Resume 1:00 PM - 2:00 PM

Sample Preparation

Abstract# 101 - 10/16/2018 09:00 AM - 9:30 AM - Tulip Room

Microwave digestion replaces 10 hour ash methods for metals analysis in petroleum products
Reynhardt Klopper - Anton Paar, USA Inc.

Raman Spectroscopy

Abstract# 171 - 10/16/2018 09:30 AM - 9:55 AM - Tulip Room

Real-Time Monitoring of Key Jet and Diesel Parameters Via Raman Spectroscopy
Lee Smith - Process Instruments, Inc.

Regulations

Abstract# 111 - 10/16/2018 09:55 AM - 10:15 AM - Tulip Room

The Analysis of Regulated Phthalates in a Complex Matrix using Thermal Desorption-GC/MS
Rojin Belganeh - Frontier Lab, Terry Ramus - Diablo Analytical, Itsuko Iwai - Frontier Laboratories, Robert Freeman - Frontier Laboratories

Fast Gas Chromatography

Abstract# 259 - 10/16/2018 10:15 AM - 10:45 AM - Tulip Room

Techniques to speed up the analysis in gas chromatography
Katarina Oden - Restek, Christopher Rattray - Restek, Jaap de Zeeuw - Restek, Keith Irwin - Restek

FTIR

Abstract# 145 - 10/16/2018 10:45 AM - 11:05 AM - Tulip Room

Automating Spectroscopy Calibrations
Brian Rohrback - Infometrix, Inc.



2018 CONFERENCE SCHEDULE

WEDNESDAY

Agilent Workshop

Abstract# 232 - 10/17/2018 09:00 AM - 9:30 AM - Floral Hall A 1 Room

Ultra Fast EPA 8270E Semivolatiles Analysis using the Agilent 7010B Triple Quad
Fred Feyerherm - Agilent Technologies

Abstract# 218 - 10/17/2018 09:30 AM - 10:00 AM - Floral Hall A 1 Room

Determination of Chlorides in Crude Oils by Direct Dilution Using ICP-QQQ-MS
Jenny Nelson - Agilent Technologies

Abstract# 236 - 10/17/2018 10:00 AM - 10:30 AM - Floral Hall A 1 Room

How to Upgrade your Laboratory with Advanced Intelligence and Smart Connectivity!
Jason Ashe - Agilent Technologies

Abstract# 219 - 10/17/2018 10:45 AM - 11:15 AM - Floral Hall A 1 Room

Out of the Box LIMs Interface
Kathleen O'Dea - Agilent Technologies

Abstract# 220 - 10/17/2018 11:30 AM - 12:00 PM - Floral Hall A 1 Room

GPC Analysis in the Open Lab 2.3 Environment
Sue D'Antonio - Agilent Technologies

Metrohm Seminar

Abstract# 187 - 10/17/2018 10:00 AM - 10:30 AM - Wisteria Room

Burning through the Confusion: See How Combustion IC Provides Superior Halide Analysis
Jay Sheffer - Metrohm USA

Abstract# 251 - 10/17/2018 10:30 AM - 11:00 AM - Wisteria Room

Simple, Efficient Petrochemical Analysis with NIR and Raman Spectroscopy
Adam Hopkins - Metrohm USA, Raghvendra Sengar - Metrohm USA

Abstract# 193 - 10/17/2018 01:30 PM - 2:00 PM - Wisteria Room

Better Surfactant Analysis and a New Approach for Cloud Point
Kerri-Ann Blake - Metrohm USA, Lori Spafford - Metrohm USA

Abstract# 194 - 10/17/2018 02:00 PM - 2:30 PM - Wisteria Room

Robotic Titration for Consolidating Petrochemical Titrations
Kerri-Ann Blake - Metrohm USA, Lori Spafford - Metrohm USA

Thermo Scientific

Analytical Technologies: Chromatography, Mass Spectrometry and Trace Elemental Analysis Workflows for Oil and Gas

Breakfast 9:00 AM (Breakfast will be served)

Abstract# 179 - 10/17/2018 09:00 AM - 10:00 AM - Hibiscus Room

Streamline your laboratory workflow with Thermo Scientific Chromeleon CDS
Greg Whitaker - Thermo Fisher Scientific

Abstract# 147 - 10/17/2018 10:00 AM - 10:30 AM - Hibiscus Room

Integrated Informatics: Real-time Evaluation of Results for Process Monitoring
Larry West - Thermo Fisher Scientific

Abstract# 177 - 10/17/2018 10:45 AM - 11:15 AM - Hibiscus Room

Determination of Moisture Content In Liquefied Petroleum Gases By Gas Chromatography
James Pachlhofer - Thermo Fisher Scientific

Abstract# 173 - 10/17/2018 11:30 AM - 12:00 PM - Hibiscus Room

Method Optimization for the Analysis of Challenging Organic Samples by ICP-OES
Sabrina Antonio - Thermo Fisher Scientific

Lunch 12:00 PM (Buffet Lunch will be served)

Abstract# 178 - 10/17/2018 12:00 PM - 1:00 PM - Hibiscus Room

New Columns and Consumables to Solve Challenges in Ion Chromatography
Kirk Chassaniol - Thermo Fisher Scientific

Abstract# 199 - 10/17/2018 1:00 PM - 1:30 PM - Hibiscus Room

Using Mass Spectrometry as an Ion Chromatography Confirmation Tool For The Determination of Alkylamines and Alkanolamines in Scrubbing Solutions
Carl Fisher, Terri Christison & Jeff Rohrer - Thermo Fisher Scientific

Abstract# 264 - 10/17/2018 01:30 PM - 2:00 PM - Hibiscus Room

Using Combustion Ion Chromatography to Determine Halogens and Sulfur in Aromatic Hydrocarbons
Carl Fisher - Thermo Fisher Scientific

Abstract# 265 - 10/17/2018 2:00 PM - 2:30 PM - Hibiscus Room

Rapid Determination of Heat Stable Salts using Ion Chromatography
Carl Fisher - Thermo Fisher Scientific

Restek/Shimadzu Petrochem GC Applications Workshop

Abstract# 255 - 10/17/2018 09:00 AM - 12:00 PM - Floral Hall A 2 Room

Restek/Shimadzu Petrochem GC Applications Workshop
Jeff Werner - Shimadzu, Jan Pijpelink - Restek

Chromatography

Abstract# 138 - 10/17/2018 09:00 AM - 9:30 AM - Exhibit Hall A4

Latest Developments in Ionic Liquid Stationary Phase Technology
Leonard Sidisky - MilliporeSigma (Supelco), Jamie Desorcie - MilliporeSigma, Greg Baney - MilliporeSigma, Kathy Kiefer - MilliporeSigma

2018 CONFERENCE SCHEDULE

WEDNESDAY

Abstract# 135 - 10/17/2018 09:30 AM - 9:50 AM - Exhibit Hall A4

Application of Fast GC Column Technology to On-line Process Gas Chromatography

Eric Schmidt - Dow Chemical, Anna Sandlin - Dow Chemical, Linda Heinicke - Dow Chemical, Bill Winniford - Dow Chemical, Wilco Hoogerwerf - Dow Chemical, Jasper Van Noyen - Dow Chemical, Dale Ashworth - Valco Instruments Company, Inc., Chris Bishop - Valco Instruments Company, Inc.

Abstract# 182 - 10/17/2018 9:50 AM - 10:10 AM - Exhibit Hall A4

CNS SIMDIS – Boiling point distribution data for Carbon, Sulfur and Nitrogen in Crude oil

Marijn van Harmelen - PAC AC ANALYTICAL CONTROLS

Abstract# 210 - 10/17/2018 10:10 AM - 10:30 AM - Exhibit Hall A4

Polyarc Advancements Reduce the Dependence on Complex Standards for Trace Impurities by GC/FID

W. Christopher Siegler - The Dow Chemical Company, Marla Gilbert - The Dow Chemical Company, James Griffith - The Dow Chemical Company, Bill Winniford - The Dow Chemical Company, Jim Luong - The Dow Chemical Company, Andrew Jones - Activated Research Company

Gas Chromatography Applications

Abstract# 136 - 10/17/2018 10:30 AM - 10:55 AM - Exhibit Hall A4

Turning up the heat on WAX GC columns without getting burned

Vanessa Abercrombie - Agilent Technologies, Daron Decker - Agilent Technologies

Abstract# 118 - 10/17/2018 01:30 PM - 2:00 PM - Exhibit Hall A4

Olefin Class Characterization In Gasoline-Range Samples Using Gas Chromatography - Vacuum Ultraviolet Spectroscopy

Alex Hodgson, Jack Cochran - VUV Analytics

Abstract# 141 - 10/17/2018 02:00 PM - 2:30 PM - Exhibit Hall A4

Estimating Particulate Matter Index for Gasoline with Fast Gas Chromatography – Vacuum Ultraviolet Spectroscopy

Jack Cochran - VUV Analytics, Sean Jameson - VUV Analytics, Dan Wispinski - VUV Analytics, James Diekmann - VUV Analytics

Chromatography

Abstract# 207 - 10/17/2018 02:30 PM - 2:50 PM - Exhibit Hall A4

Simplifying GCxGC – Streamlined Software for Fast Characterization of Petrochemicals

Matthew Edwards - SepSolve Analytical, Laura McGregor - SepSolve Analytical, Nick Bukowski - SepSolve Analytical

Gas Chromatography Applications

Abstract# 152 - 10/17/2018 02:50 PM - 3:20 PM - Exhibit Hall A4

Fast Analysis of Non-Traditional Gasoline Additives with Gas Chromatography – Vacuum Ultraviolet Spectroscopy

Ryan Schonert - VUV Analytics, Dan Wispinski - VUV Analytics, Jack Cochran - VUV Analytics

Gas, Oil & Pet Applications

Abstract# 143 - 10/17/2018 09:00 AM - 9:30 AM - Daffodil Room

CFR Innovations by StanCo Scientific, Inc.
Jeremy Majewski - StanCo Scientific, Inc.

Abstract# 117 - 10/17/2018 09:30 AM - 10:00 AM - Daffodil Room

50 Minute Detailed Hydrocarbon Analysis of Gasoline Using Gas Chromatography – Vacuum Ultraviolet Absorption Spectroscopy

James Diekmann - VUV Analytics, Jack Cochran - VUV Analytics

Abstract# 156 - 10/17/2018 10:00 AM - 10:20 AM - Daffodil Room

Using Static Headspace GC-VUV to Detect Methanol in Crude Oil

James Diekmann - VUV Analytics, Ryan Schonert - VUV Analytics, Dan Wispinski - VUV Analytics, Jack Cochran - VUV Analytics

GC/MS

Abstract# 133 - 10/17/2018 10:20 AM - 10:40 AM - Daffodil Room

Fatty ACid Methyl Ester in Fuels by GC-MS & GCxGC

Ramkumar Dhandapani - Phenomenex

Abstract# 158 - 10/17/2018 10:40 AM - 11:00 AM - Daffodil Room

Improved Identification Of Components in Hydrocarbon Samples Through Enhanced Capabilities of a Low Energy EI High-Resolution Mass Spectrometer

Courtney Milner - Agilent Technologies, Kai Chen - Agilent Technologies, Sofia Nieto - Agilent Technologies, Nathan Eno - Agilent Technologies

LIMS

Abstract# 114 - 10/17/2018 01:00 PM - 1:30 PM - Daffodil Room

Finding the Perfect LIMS in the Petrochemical and Refining Sectors

Steve Wesson - Accelerated Technology Laboratories

Lab Business

Abstract# 226 - 10/17/2018 01:30 PM - 2:30 PM - Daffodil Room

Implementing LEAN Tools in the Laboratory

Jeanne Mensingh - Labtopia

Sample Preparation

Abstract# 204 - 10/17/2018 02:30 PM - 2:55 PM - Daffodil Room

Lab Automation Using Excel

Scot Abbott - Phoenix

2018 CONFERENCE SCHEDULE

WEDNESDAY

LIMS

Abstract# 115 - 10/17/2018 09:00 AM - 9:55 AM - Tulip Room

Laboratory Automation Today in the Oil & Gas Industry
Christine Paszko - Accelerated Technology Laboratories

Abstract# 151 - 10/17/2018 09:55 AM - 10:25 AM - Tulip Room

LV LIMS Industry accelerator assists in implementing Oil and Gas labs best practices into production faster
Dan Call - LabVantage Solutions, Inc.

Oil & Crude Applications

Abstract# 233 - 10/17/2018 10:25 AM - 10:45 AM - Tulip Room

Determination of the Wax Appearance Temperature (WAT) by DSC
Samantha Nania - PerkinElmer

Abstract# 176 - 10/17/2018 10:45 AM - 11:15 AM - Tulip Room

Analyzing Live Crude: Complete C1 to C100. How much information can we get?
Chris Goss - Innotech Alberta, Amanda Prefontaine - Innotech Alberta, Lee Marotta - PerkinElmer

Abstract# 149 - 10/17/2018 11:15 AM - 11:40 AM - Tulip Room

Analytical methods for determination and quantification of olefins/diolefins in cracked petroleum streams
Rafal Gieleciak - Natural Resources Canada, Kirk Michaelian - Natural Resources Canada, Nicole Heshka - Natural Resources Canada, Cecile Lay - Natural Resources Canada, Jinwen Chen - Natural Resources Canada

X-ray

Abstract# 180 - 10/17/2018 01:00 PM - 1:20 PM - Tulip Room

Advances in Benchtop Wavelength-Dispersive X-Ray Fluorescence Spectrometry - For Petrochemical Applications!
Dan Pecard - Bruker AXS

Petrochemical

Abstract# 139 - 10/17/2018 01:20 PM - 1:50 PM - Tulip Room

Thermal-Vaporization/Pyrolysis and GC/MSMS of Evolved Hydrocarbon from Source Rocks and mud-rock Reservoirs
Thomas Malloy - University of Houston-Department of Earth and Atmospheric Sciences, Mei Mei - University of Houston-Center for Petroleum Geoche, Jeffery C. Wright - University of Houston- Center for Petroleum Geoche, Adry Bissada - University of Houston- Center for Petroleum Geoche

QA/QC

Abstract# 112 - 10/17/2018 01:50 PM - 2:10 PM - Tulip Room

Analysis, Characterization, and Deformulation of Apparently Similar Rubber Parts Using Multiple Modes of Pyrolysis-GC/MS
Terry Ramus - Diablo Analytical

Abstract# 202 - 10/17/2018 02:10 PM - 2:40 PM - Tulip Room

The Correlation Between Tier 3 RVP Analysis, Laboratory Automation, and Quality
Liz Sherburne - LGC Standards

Abstract# 100 - 10/17/2018 09:00 AM - 9:20 AM - Iris Room

Fuel Quality is Changing and Contaminates are Increasing: How to protect your gas fired turbine engine
Kristen Cassels - SGS North America, Inc.

Abstract# 225 - 10/17/2018 09:20 AM - 9:50 AM - Iris Room

Utilizing a Laboratory Information Management System (LIMS) to meet ISO 17025 Requirements
Jeanne Mensingh - Labtopia

Abstract# 250 - 10/17/2018 09:50 AM - 10:50 AM - Iris Room

Applying Risk-Based Thinking to Laboratory Operations
Gretchen McAuliffe - Labtopia

Essential Measurements

Abstract# 146 - 10/17/2018 01:00 PM - 2:00 PM - Iris Room

DSC and TGA 101: Introduction to Thermal Analytical Techniques
John Erne - NETZSCH Instruments

Research & Development

Abstract# 211 - 10/17/2018 02:00 PM - 2:45 PM - Iris Room

Catalyst Regeneration and Performance by STA-QMS in Humid and Corrosive Environments
John Erne - NETZSCH Instruments

Abstract# 209 - 10/17/2018 02:45 PM - 3:25 PM - Iris Room

Application of ACOMP (Automatic Continuous Online Monitoring of Polymerizations) for Process and Quality Improvements Based on Real-Time Measurements in Polymerizations
Sigmund Floyd - Fluence Analytics, Michael Drenski - Fluence Analytics

Abstract# 264 - 10/17/2018 01:00 PM - 1:30 PM - Hibiscus Room

Using Combustion Ion Chromatography to Determine Halogens and Sulfur in Aromatic Hydrocarbons
Carl Fisher - Thermo Fisher Scientific

Gas Chromatography Applications

Abstract# 228 - 10/17/2018 09:00 AM - 9:25 AM - Orchid Room

Determination of Total Organochlorinated Components in Used Engine Oils by XSD-GC (Halogen Specific Detector)
Leeman Bennington - PerkinElmer, Lee Marotta - PerkinElmer

2018 CONFERENCE SCHEDULE

WEDNESDAY

Abstract# 223 - 10/17/2018 09:25 AM - 9:55 AM - Orchid Room

Learn Easy Techniques and Enhance Productivity with Dean Switching and Backflushing
Lee Marotta - PerkinElmer, Leeman Bennington - PerkinElmer, David Scott - PerkinElmer

Essential Measurements

Abstract# 205 - 10/17/2018 09:55 AM - 10:40 AM - Orchid Room

TOC Monitoring in Chemical Industries
Gary Boostrom - Landon and Associates Liquid Analysis Experts

Gas Chromatography Applications

Abstract# 160 - 10/17/2018 10:40 AM - 11:00 AM - Orchid Room

Fully automated Trace Level gas generation and its application for calibration, linearization, LOD validation in hydrocarbon analysis.
Laurent Courthaudon - AlyTech

Abstract# 161 - 10/17/2018 11:00 AM - 11:20 AM - Orchid Room

Recent Advances in Catalysis for the Measurement of CO, CO₂, and Formaldehyde
Rajvi Mehta - Activated Research Company

Abstract# 184 - 10/17/2018 11:20 AM - 11:45 AM - Orchid Room

Combination of Split/Splitless Inlet and Back-Flushing Valve Configuration in Online Gas Chromatography Analysis
Binghe Gu - The Dow Chemical Company, Suzanne Lehr - The Dow Chemical Company, Joyce Zhang - The Dow Chemical Company, Eric Schmidt - The Dow Chemical Company, Bill Winniford - The Dow Chemical Company, Balamurali Sreedhar - The Dow Chemical Company

Research & Development

Abstract# 229 - 10/17/2018 01:00 PM - 2:30 PM - Orchid Room

Solid-state cooling/supercooling of viscometer baths
Mohammed Ghorabian - PSL-rheotek & Anglia Ruskin University, Javaid Butt - Anglia Ruskin University, Stephen Gosling - PSL-Rheotek, Hassan Shirvani - Anglia Ruskin University, Akhtar Mahmood - PSL-Rheotek

Essential Measurements

Abstract# 203 - 10/17/2018 09:00 AM - 11:30 AM - Jasmine Room

Leveraging the Power of Excel in Analysis & Research
Scot Abbott - Prens

Sample Preparation

Abstract# 172 - 10/17/2018 01:00 PM - 2:00 PM - Jasmine Room

Integrating Perma Pure's Nafion Gas Sample Dryers into Your Analyzers and Scientific Experiments
Gene Bohensky - Perma Pure

Chromatography

Abstract# 108 - 10/17/2018 02:00 PM - 3:30 PM - Jasmine Room

Understanding how to develop quality methods in GPC/ SEC and Liquid chromatography
Larry Meeker - Waters Corp

ASTM D02.D Committee Meeting

Abstract# 260 - 10/17/2018 03:30 PM - 5:30 PM - Floral Hall A 1 Room

ASTM D02.D Committee Meeting: Committee on Hydrocarbons for Chemical and Special Uses
George Gonzalez - ASTM

Baytek User Group

Abstract# 249 - 10/17/2018 06:00 PM - 8:00 PM - Colonel Paddlewheel

****Baytek User Group 35 Year Anniversary Celebration****
Jonathan Richter - Baytek International

Please join us to celebrate the past, present, and future of innovation on the Colonel Paddlewheel boat for a sunset cruise and dinner.

Get your tickets at the Baytek booth #215. The Colonel is open at the Moody Garden's dock for drinks and appetizers at 5 PM and will leave the dock for a sunset cruise at 6 PM.

POSTER SESSIONS

WEDNESDAY

Oil & Crude Applications

Abstract# 102 - 10/17/2018 10:00 AM - South Lobby
EDXRF Technology's Applications to Measure the Sulfur Content in Ultra-Low Sulfur Fuels and to Measure Organometallic Additives in Lubrication Oils and Motor Gasoline.
Raj Shah - Koehler Instrument Company, Inc., Arthur Rozario - Koehler Instrument Company, Inc., Scott Fess - Applied Rigaku Technologies, Inc.

Abstract# 103 - 10/17/2018 10:30 AM - South Lobby
Innovative Instrumentation Design for Measuring Multiple Fuel Properties in Diesel Fuel
Raj Shah - Koehler Instrument Company, Inc., Arthur Rozario - Koehler Instrument Company, Inc., Wayne Smith - Real-Time Analyzers

Abstract# 106 - 10/17/2018 01:00 PM - South Lobby
Recent Advances in a Unique Laboratory Technique SRV® to Study and Help Solve a Wide Range of Tribological Real-life Problems
Raj Shah - Koehler Instrument Company

Abstract# 162 - 10/17/2018 01:00 PM - South Lobby
Diesel Fuels and Additives – Interference-free Determination of Total Sulfur with the Patented MPO Technology
Stefan Jezierski - Analytik Jena AG, Oliver Buettel - Analytik Jena AG

Abstract# 197 - 10/17/2018 01:30 PM - South Lobby
Acid Number of Crude Oils and Petroleum Products by Catalytic Thermometric Titration using ASTM D8045
Kerri-Ann Blake - Metrohm USA, Lori Spafford - Metrohm USA

Abstract# 234 - 10/17/2018 02:00 PM - South Lobby
Identification of Oils by Synchronous Fluorescence Spectroscopy
Samantha Nania - PerkinElmer, Steve Upstone - PerkinElmer, Kathryn Lawson-Wood - PerkinElmer

Process & Mass Spectrometers

Abstract# 107 - 10/17/2018 11:30 AM - South Lobby
Evaluation of Degradation Degree of Lubricating Oil Using Thermal Desorption and Pyrolysis Combined with DART-MS and Kendrick Mass Defect Analysis
CHIKAKO TAKEI - BioChromato, Inc., KENICHI YOSHIKAWA - BioChromato, Inc.

Research & Development

Abstract# 119 - 10/17/2018 11:30 AM - South Lobby
Application of ASTM Test Methods to Analyze the Oxidation Properties of Automotive Gasoline in Various Test Conditions
Dr Raj Shah - Koehler Instrument Company, Tahseen Tabassum - Koehler Instrument Company

Other

Abstract# 120 - 10/17/2018 02:30 PM - South Lobby
Ongoing Developments of ILSAC GF-6 Engine Oils Standards
Raj Shah - Koehler Instrument Company, Inc., Christin Abraham - Stony Brook University

Abstract# 122 - 10/17/2018 03:00 PM - South Lobby
Assessment of Biodiesel Quality Test Methods Used in Middle Distillate Fuels
Raj Shah - Koehler Instrument Company, Inc, Aristidis Mihalos - Stony Brook University

Abstract# 128 - 10/17/2018 03:30 PM - South Lobby
The effect of intermolecular forces and entropy on viscosity, vapor pressure and evaporation in hydrocarbon oils
Tom Karis - TEK Data Systems, Raj Shah - Koehler Instrument Company Inc., Andrew Zheng - Koehler Instrument Company Inc.

Abstract# 256 - 10/17/2018 10:00 AM - South Lobby
Applicability of micro packed columns (1/16"x 1 mm id) packed with DiatoSorb solid support and configured for use in a dedicated capillary Agilent 6890 and 7890 GC.
Barry Burger - Restek Corp.

Gas Chromatography Applications

Abstract# 126 - 10/17/2018 10:00 AM - South Lobby
Analysis of Industrial Polymer Application Defects by GCxGC
Christian Wold - SABIC, Eric Brander - SABIC, Jan Willem Heuseveldt - SABIC, Jos Dekkers - SABIC

Abstract# 131 - 10/17/2018 01:00 PM - South Lobby
Orthogonal Selectivity for separation of light and heavy Petroleum Hydrocarbons by GCxGC
Ramkumar Dhandapani - Phenomenex

Abstract# 132 - 10/17/2018 02:30 PM - South Lobby
Improved High Temperature Simulated Distillation (ASTM D6352 and D7169) Using Zebtron™ ZB-1XT SimDist Metal GC Columns
Ramkumar Dhandapani - Phenomenex

Abstract# 134 - 10/17/2018 11:30 AM - South Lobby
Cis- Trans FAME in Fuels by GC & GCxGC using ZB-FAME GC Column
Ramkumar Dhandapani - Phenomenex

Abstract# 140 - 10/17/2018 11:00 AM - South Lobby
Purity Measurement of Cyanogen Chloride using GC/MS and GC-ICP-MS
William Geiger - CONSCI, Ltd.

Abstract# 206 - 10/17/2018 01:30 PM - South Lobby
Analysis of Oxygenates and Aromatics Using ASTM Method D4815 and D5580
David Scott - PerkinElmer, Lee Marotta - PerkinElmer, Leeman Bennington - PerkinElmer

Abstract# 222 - 10/17/2018 02:00 PM - South Lobby
Optimizing GCxGC Parameters for Petroleum Analysis using a Free Web-Based Tool
Christina Kelly - LECO Corporation, Joseph Binkley - LECO Corporation, Lorne Fell - LECO Corporation

Abstract# 238 - 10/17/2018 10:30 AM - South Lobby
Determination of Organic Chlorides in Petroleum Products Using a Halogen Specific Detector (XSD)
Cynthia Elmore - OI Analytical

Abstract# 258 - 10/17/2018 02:00 PM - South Lobby
Solutions for analysis of FAME Biodiesel quality using gas chromatography
Katarina Oden - Restek, Barry Burger - Restek

Elemental Analyses

Abstract# 153 - 10/17/2018 10:00 AM - South Lobby
Precision Comparison Between ASTM Sulfur Test Methods D7039, D2622, and D5453
Joseph Iaia - XOS, Leslie Johnson - XOS

POSTER SESSIONS WEDNESDAY

Abstract# 170 - 10/17/2018 10:00 AM - South Lobby
Total Sulfur and Nitrogen Analysis Using a Multi-Layer Combustion Tube
Anne Jurek - EST Analytical, Cory Black - EST Analytical

Gas, Oil & Pet Applications

Abstract# 163 - 10/17/2018 03:00 PM - South Lobby
Analysis of Toxic Metals and TOC in Process and Waste Waters of the Petrochemical Industry
Bernd Bletzinger - Analytik Jena AG, Oliver Buettel - Analytik Jena

Abstract# 227 - 10/17/2018 03:30 PM - South Lobby
Determination of Organochlorinated Components in Petrochemical Streams by XSD-GC (Halogen Specific Detector)
Leeman Bennington - PerkinElmer, Lee Marotta - PerkinElmer

Particle Size

Abstract# 174 - 10/17/2018 10:30 AM - South Lobby
Detection of the Onset of Aggregation as a Function of pH of Iron Oxide Nanopowder by Dynamic Light Scattering
Lauren Szwasz - Brookhaven Instruments Inc.

Abstract# 175 - 10/17/2018 11:00 AM - South Lobby
Micellar Water Characterization: A Laser Light Scattering Application
Dana Castro - Brookhaven Instruments

Sample Preparation

Abstract# 196 - 10/17/2018 10:00 AM - South Lobby
OMNIS: Titration for Faster, Safer and Easier Analysis
Kerri-Ann Blake - Metrohm USA

Abstract# 213 - 10/17/2018 02:30 PM - South Lobby
Analytical Sample Prep: The Forgotten Part of Method Development
Thomas Valorose - Pall Laboratory

Chromatography

Abstract# 200 - 10/17/2018 10:00 AM - South Lobby
Determination of Total Fluorine, Chlorine, and Sulfur in Aromatic Hydrocarbons by Oxidative Pyrolytic Combustion Followed by Ion Chromatography (Combustion Ion Chromatography-CIC)
Carl Fisher - Thermo Fisher Scientific, Sachin Patil - Thermo Fisher Scientific, Jeff Rohrer - Thermo Fisher Scientific

Abstract# 201 - 10/17/2018 10:30 AM - South Lobby
Fast Separation of Heat Stable Salts
Carl Fisher - Thermo Fisher Scientific, Manali Aggrawal - Thermo Fisher Scientific, Jeff Rohrer - Thermo Fisher Scientific

Abstract# 208 - 10/17/2018 11:00 PM - South Lobby
Analysis of Total Petroleum Hydrocarbons (TPH) by GCxGC-FID
Matthew Edwards - SepSolve Analytical, Laura McGregor - SepSolve Analytical, Mark Lemons - Markes International, Aaron Parker - SepSolve Analytical

Simplify and Accelerate Gas Analysis

Sulphur in
natural gas
<1 minute

C1-C6
natural gas
<2 minute

Refinery gas
<3 minute

EXHIBIT HALL A4 | 10-16-2018 | 9:00 AM
Extended Analysis of Natural Gas
Using a Micro GC
by Vince Giarrocco, Micro GC Specialist

EXHIBIT HALL A4 | 10-16-2018 | 9:20 AM
Sulfur in Natural Gas
by Christina Heacox, Product Engineer



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2018 ABSTRACTS

Abstract# 100 - 10/17/2018 09:00 AM - 9:20 AM - Iris Room

Fuel Quality is Changing and Contaminates are Increasing:
How to protect your gas fired turbine engine

Kristen Cassels - SGS North America, Inc.

Today's highly efficient turbines rely on high-quality alloys to permit increased firing temperatures to be achieved and to maintain acceptable product life. Therefore, more attention has to be placed on the quality of the fluids, from all sources, entering the gas turbine, especially the fuel. Gas Turbines can - and do - use a wide range of gaseous and liquid fuels and the subject of fuel quality is a major topic to consider in more depth. As new gas fields are developed in remote sections of the globe, we at SGS have witnessed an accelerated development and production of gas fuels and especially the production of green gas fuels such as sour gas and land fill gases. All Gas Turbine OEMs, including Siemens, provide comprehensive specifications covering the fuel quality permitted for use in a gas turbine. These are used to ensure fuel quality is defined at the onset of a project and throughout the lifetime of the turbine and are prepared to ensure acceptable turbine operation is achieved with little or no impact on major turbine component life. At SGS we want to provide insight and understanding of fuel composition so that measures can be taken to minimize the impact of any major constituents of the fuel, along with the potential impact on turbine components of any identified contaminants and ways to mitigate this impact. Compositions of gaseous fuels, for example, can vary quite widely depending on their source and can contain a number of hydrocarbon species along with inert gases as well as contaminants. Liquid fuels are also commonly used, often as a back-up fuel, and these can also contain potentially harmful contaminants.

Abstract# 101 - 10/16/2018 09:00 AM - 9:30 AM - Tulip Room

Microwave digestion replaces 10 hour ash methods for metals analysis in petroleum products

Reynhardt Klopper - Anton Paar, USA Inc.

Laboratories preparing petroleum samples for metals analysis have been using ASTM test methods D5708-B, D5863-A or IP 501 to prepare samples. These methods are slow, inefficient and laborious. Recently approved ASTM standard practice D7876 can reduce the preparation time, acid consumption and eliminate operator's exposure to corrosive vapors. A novel microwave digestion instrument will be presented, which enables efficient and reproducible digestion of a wide variety of petroleum samples. Up to 24 different samples can be processed simultaneously, even applying varying acid mixtures. Digestions are performed under reflux or stirring to overcome challenges associated with highly viscous, buoyant, or reactive samples

Abstract# 102 - 10/17/2018 10:00 AM - South Lobby

EDXRF Technology's Applications to Measure the Sulfur Content in Ultra-Low Sulfur Fuels and to Measure Organometallic Additives in Lubrication Oils and Motor Gasoline.

Raj Shah - Koehler Instrument Company, Inc., Arthur Rozario - Koehler Instrument Company, Inc., Scott Fess - Applied Rigaku Technologies, Inc.

The Energy Dispersive X-ray Fluorescence Spectrometry (EDXRF) is a fast, simple, and non-destructive analysis technique for the measurement of liquids, powders, and solids. It is widely applied throughout the petroleum industry: upstream at the well site, mid-stream at pipelines, storage facilities and blending operations, and down-stream at the refinery. Recently, with the Environmental Protection Agency (EPA) mandating new regulations on the composition of fuel, the maximum allowable sulfur content

has been scaled down to 10 parts per million (ppm). Therefore, the EDXRF is an ideal analytical tool for refiners - with good lab practices- to accurately determine the sulfur content in fuel samples, conforming to not only ASTM D7220, but also meeting the testing requirements for the EPA Tier 3 program for ultra-low sulfur fuels such as gasoline and diesel. Furthermore, the EDXRF can be used to determine concentration of some elements such as manganese, lead, zinc, phosphorous, and calcium. The determination of manganese and lead content gives an indication of the anti-knock agent added to motor gasoline and Avgas to improve octane rating. Whilst the determination of zinc, phosphorous, calcium, and Sulfur give an indication of the antioxidant, and antiwear agents in lubricating oils. The versatile application of the EDXRF allows end-users to effectively ascertain correct results for this desired use and conform to international testing standards.

Abstract# 103 - 10/17/2018 10:30 AM - South Lobby

Innovative Instrumentation Design for Measuring Multiple Fuel Properties in Diesel Fuel

Raj Shah - Koehler Instrument Company, Inc., Arthur Rozario - Koehler Instrument Company, Inc., Wayne Smith - Real-Time Analyzers

The efficiency, economy, and reliability of diesel engines has made it popular for use in transportation, manufacturing, power generation, construction, and farming. In 2004, 60 percent (%) of trucks in the United States was recorded to consume diesel fuel. In fact, the sales of diesel fuel are an indicator of economic strength, as diesel engines are commonly used to move goods from manufacturer to consumer. It is advantageous to the end-user or consumer to have a reliable and effective way to quickly determine properties of a fuel. However, determining the properties of fuel can be a time-consuming process. Therefore, the Portable Fuel Property Analyzer (PFPA) is an innovative technique developed for fuel quality assessment for in-field analysis of diesel fuel that can be compared to the governing ASTM requirements. The PFPA combines Near Infrared Spectroscopy with Advanced Chemometric Analysis to determine key fuel properties that must meet specification standards. The PFPA correlates a database of NIR spectra to fuel properties that were determined with traditional ASTM methods using partial least squares (PLS). The PLS models were then compared to a validation set of fuel samples. The predicted values of PFPA exhibit comparable accuracy to ASTM methods and the repeatability values often-exceeding ASTM repeatability values. In contrast to standard ASTM test methods, which require a specific instrument for each property and a large volume of fuel sample, the PFPA can determine multiple fuel properties of diesel fuel in 10 seconds using only 2ml of sample. This allows end-users to test diesel fuel rapidly, and to quickly determine if it meets fuel specification requirements.

Abstract# 104 - 10/16/2018 09:20 AM - 9:50 AM - Iris Room

The Analysis of contaminants in Petroleum Products

Michael Pohl - HORIBA Instruments, Inc.

Both organic, inorganic and organo-metallic compounds show up as contaminants in petroleum products. They can range from ppb levels all of the way to wt.% in samples. In crude oil these materials are contaminants which came through the sample treatment while in lubricating oils. These are materials which were intentionally added for performance reasons. These materials can include most every element in the Periodic Table with many occurring in the same sample. These challenges require the use of multiple analytical techniques to solve these problems. One of the most versatile ways to meet this challenge is to

use X-ray Fluorescence Spectroscopy. The two possible approaches, WDXRF and EDXRF, have evolved to be two possible solutions to this challenge. Both techniques can handle multiple elements and have been developed to have reasonably LOQ types of values. These approaches will be compared and contrasted using some real-world samples for comparison. The application to actual samples from an application perspective will be made.

Abstract# 106 - 10/17/2018 01:00 PM - South Lobby

Recent Advances in a Unique Laboratory Technique SRV® to Study and Help Solve a Wide Range of Tribological Real-life Problems

Raj Shah - Koehler Instrument Company

The SRV® test system- where SRV stands for the German acronym for oscillation, friction and wear – provides diverse model test environment for evaluating the friction and wear properties of lubricants, greases and materials.

Due to its versatile application this test system is appealing to be adopted by the industry to test their components in setups with high practical relevance and in conjunction with lubricants, materials and layers. In this study, a reciprocal model test has been applied that reproduces the real load situation of the contact of piston ring and cylinder linear at Fired Top Dead Center (FTDC) of internal combustion engines. Friction, wear, and load carrying capacity (LCC) were analyzed as a function of temperature, oil supply rate, and normal force for grey cast iron and spray coated cylinder liners, different piston ring coatings and engine oils. The test results show a significant dependency of the LCC on changing temperature and oil supply rate corresponding to different cylindrical pressures. Furthermore, the SRV® technology is in compliance with 19 ISO, DIN, and ASTM testing standards developed by the SRV® standardization work group. As the established industry standard for friction and wear testing, the SRV® provides high precision results that help solve a wide range of tribological real-life problems.

Abstract# 107 - 10/17/2018 11:30 AM - South Lobby

Evaluation of Degradation Degree of Lubricating Oil Using Thermal Desorption and Pyrolysis Combined with DART-MS and Kendrick Mass Defect Analysis

CHIKAKO TAKEI - BioChromato, Inc., KENICHI YOSHIZAWA - BioChromato, Inc.

Lubricating oil is composed of base oil and additives. In order to analyze the base oils and additives of lubricating oils, complicated pretreatment which takes a lot of time and effort were required, generally. However, for R&D, QC and market research, it is important to obtain the information on base oils and additives. Recently, thermal desorption and pyrolysis/direct analysis in real time (TDP/DART)-MS and Kendrick Mass Defect (KMD) analysis is using for polymer analysis, respectively. The purpose of this work to Analysis directly and evaluate the degradation degree of lubricating oils. In the thermal desorption region, a phenol type antioxidant, an amine type antioxidant, a salicylic acid type detergent dispersant were detected and determined from all samples. No significant difference in the amount ratio of additive components at 0 km and 1000 km running, but at 5000 km, salicylic acid type detergent and phenolic antioxidant was remarkably decreased. Therefore, TDP/DART-MS enables evaluation of degradation degree of lubricating oils using the additive intensity as a marker. In the pyrolysis region, using KMD analysis, the glycol compounds were detected by automobile running, clearly. And it increased with increasing in mileage. It was assumed that the glycol compounds were one of degradation compounds of lubricating oils. Therefore, KMD analysis was valuable way to search the differences between complex

mass spectra. In summary, a combination of TDP/DART-MS and KMD analysis enables analysis both additives and base oil without any pretreatment. Therefore, the combination can contribute to elucidate of the degradation mechanism, failure analysis, R&D, and quality control in the field of automobiles.

Abstract# 108 - 10/17/2018 02:00 PM - 3:30 PM - Jasmine Room

Understanding how to develop quality methods in GPC/ SEC and Liquid chromatography

Larry Meeker - Waters Corp

This training course is designed to discuss the practical aspects of method development for both GPC and LC. We will discuss; system set up, column selection, solvent choice and detector selection. Both the novice and seasoned chemist will find value in the topics covered such as Alpha, K, plate count, effects of pH etc. We will outline a process for developing a method from scratch that is easy and strait forward.

Abstract# 110 - 10/16/2018 01:20 PM - 3:20 PM - Daffodil Room

The Pyrolysis Workshop

Terry Ramus - Diablo Analytical, Itsuko Iwai - Frontier Laboratories, Rojin Belganeh - Frontier Laboratories

Pyrolysis performed correctly is a valuable and easy to use sample introduction technique for GC and GC/MS. It allows the user to characterize any solid or viscous organic materials that otherwise could not be analyzed by GC. Learn when to use Evolved Gas Analysis, Thermal Desorption, Heart-Cutting, or Pyrolysis; all with the same system. Potential, new and existing users of Frontier Labs' Multi-functional Pyrolyzer products are encouraged to attend. No prior experience needed.

Topics:

- Materials characterization "method map": a formula for success.
- Applications: deformation, polymers, additives, coatings, biomass, oil shale, quantitative methods.
- Data Review Tools: hands-on use of F-Search Software and MS Libraries.
- Maintenance and Discussion Sessions.

Abstract# 111 - 10/16/2018 09:55 AM - 10:15 AM - Tulip Room

The Analysis of Regulated Phthalates in a Complex Matrix using Thermal Desorption-GC/MS

Rojin Belganeh - Frontier Lab, Terry Ramus - Diablo Analytical, Itsuko Iwai - Frontier Laboratories, Robert Freeman - Frontier Laboratories

Phthalates have been used as additives in plastic for many years to make them more flexible. Several phthalates are regulated on a global scale, and several analytical techniques can be used for phthalates analysis. Thermal Desorption (TD)-GC/MS is one of the easiest and most accurate methods for phthalate analysis. Recently manufacturers have switched formulations to include unregulated phthalates. Generally, phthalates are identified using both retention time and MS spectra. However, some unregulated phthalates have similar retention times and MS spectra, compared to regulated phthalates. This is the basis of existing ASTM and IEC methods for regulated phthalates by this technique.

Abstract# 112 - 10/17/2018 01:50 PM - 2:10 PM - Tulip Room

Analysis, Characterization, and Deformation of Apparently Similar Rubber Parts Using Multiple Modes of Pyrolysis-GC/MS

Terry Ramus - Diablo Analytical

The formulation details of the polymer parts are often not known to the manufacturer or other steps in the supply chain. The same part number in the supply chain can result in a polymer part that is not made with the same formulation, yet the apparent polymer properties seem to be equivalent. Pyrolysis-GC/MS is used in multiple modes to characterize a set of rubber parts that seem approximately similar. The results reveal significant differences in chemical composition. Results can be used to monitor parts quality at the manufacturing point in the supply chain to reduce future variability in part failure.

Abstract# 113 - 10/16/2018 10:35 AM - 10:55 AM - Daffodil Room

Analysis of Acrylic Adhesives Using Pyrolysis-GC/MS
Itsuko Iwai - Frontier Lab, Terry Ramus - Diablo Analytical, Rojin Belganeh - Frontier Laboratories, Robert Freeman - Frontier Laboratories

Dicing tape is a backing tape used during silicon wafer dicing. The adhesive on the tape holds silicon dies, the pieces of semiconductor wafer, with high adhesion. The adhesive should include two features; the die must be held tightly during the cutting process, and the dicing tape must be easily removed after cutting. Die manufacturers seek techniques for material characterization of the dicing tapes as the compositions of adhesives are often not disclosed. This work demonstrates how to qualify and quantify the composition of dicing tapes using the multi-mode Pyrolysis GCMS while the adhesive was directly analyzed without sample preparation.

Abstract# 114 - 10/17/2018 01:00 PM - 1:30 PM - Daffodil Room

Finding the Perfect LIMS in the Petrochemical and Refining Sectors

Steve Wesson - Accelerated Technology Laboratories
This presentation is targeted at petrochemical and refining organizations who are looking to implement a Laboratory Information Management Systems (LIMS) and looking for guidance on making the right choice. We will focus on the critical points to remember during the selection process and walk through a list of proven LIMS selection and implementation best practices that will help ensure your LIMS project is a success. We will also discuss key LIMS features that are critical for laboratories supporting petrochemical and refining companies.

Abstract# 115 - 10/17/2018 09:00 AM - 9:55 AM - Tulip Room

Laboratory Automation Today in the Oil & Gas Industry
Christine Paszko - Accelerated Technology Laboratories
This seminar will be a primer on how laboratories in the oil and gas industry are implementing modern laboratory automation solutions to increase lab productivity and data quality while reducing costs and achieving a strong return on investment. At the center of a robust lab automation solution is a Laboratory Information Management System (LIMS), a critical software solution that is designed to streamline the sample management process from login through disposal. We'll also discuss the importance of instrument integration and bar coding as essential pieces of a complete solution. And we will also highlight several petrochemical/refining companies and their use of LIMS to manage lab operations.

Abstract# 116 - 10/16/2018 01:00 PM - 1:20 PM - Daffodil Room

Novel Quantitation Method Development for Asphaltene Inhibitor Analysis Using Pyrolysis GC-MS and MS/MS
Lei (Lyla) Cheng - Ecolab, Tim Bonner - Ecolab, Christopher Durnell - Ecolab, Casado-Rivera Emerilis - Ecolab

Asphaltene inhibitors (AI) are polymer additives to prevent the aggregation of asphaltene molecules and therefore shift the asphaltene onset pressure. AI residual analysis is significant to understand the performance of AI. AI product A is dosed at very low concentrations into the oil (up to a few hundred parts per million by volume). The challenge is to improve sensitivity at low detection limit while a trace amount of sample is used by pyrolysis GC-MS. To solve this challenge, an improved pyrolysis GC-MS (selected ion monitoring, SIM) technique is being developed for the quantitation and the potential MRM (multiple reaction monitoring) method with higher sensitivity was investigated. The curve is linear ranging from 100 ppm to 1000 ppm. The SIM method has higher sensitivity than the Full scan and EIC method in the published patent method. MRM is still under development by investigating the characteristic fragment ions of the series of nonylphenol ions. This novel method has high repeatability and high sensitivity with small amount of sample use about 0.1~0.2 mg. The technique is going to be applied to monitor the performance of the AI product in field.

Abstract# 117 - 10/17/2018 09:30 AM - 10:00 AM - Daffodil Room

50 Minute Detailed Hydrocarbon Analysis of Gasoline Using Gas Chromatography – Vacuum Ultraviolet Absorption Spectroscopy
James Diekmann - VUV Analytics, Jack Cochran - VUV Analytics

Detailed Hydrocarbon Analysis (DHA) by ASTM Method D6730 uses high-resolution GC-FID to separate and quantify individual spark-engine fuel compounds, which can then be reported as paraffins, isoparaffins, olefins, naphthenes, and aromatics (PIONA). GC run time is long and post-processing data review is necessary to ensure accurate peak integration for closely eluting compounds. GC with vacuum ultraviolet (VUV) absorption spectroscopy offers a new DHA approach. VUV spectra uniqueness enables deconvolution while class similarity of spectra permits PIONA reporting. DHA GC run time can be shortened to 50 min. Fully automated data processing produces a compound and class report in 90 sec.

Abstract# 118 - 10/17/2018 01:30 PM - 2:00 PM - Exhibit Hall A4

Olefin Class Characterization In Gasoline-Range Samples Using Gas Chromatography - Vacuum Ultraviolet Spectroscopy
Alex Hodgson - VUV Analytics, Jack Cochran - VUV Analytics
Olefins cause problems for refineries. For example, conjugated dienes in fluid catalytic cracking gasolines are prone to polymerization, which can plug downstream processes. Gas chromatography with flame ionization detection or mass spectrometry struggles with olefin differentiation. Methods specific for conjugated diene characterization vary in complexity, analysis time, and accuracy. Diene analysis using maleic anhydride addition takes more than 3 hours and suffers from incomplete reactions and interferences. Vacuum ultraviolet spectroscopy (VUV) differentiates gasoline hydrocarbons based on their distinctive spectra. Olefins – and particularly conjugated dienes – absorb strongly in the higher wavelength region, allowing for deconvolution and quantitation in complex fuel matrices.

Abstract# 119 - 10/17/2018 11:30 AM - South Lobby
Application of ASTM Test Methods to Analyze the Oxidation Properties of Automotive Gasoline in Various Test Conditions
Dr Raj Shah - Koehler Instrument Company, Tahseen Tabassum - Koehler Instrument Company
Determination of oxidation properties of petroleum products

is important to determine their reactivity in the presence of air, moisture and organic compounds. Petroleum products are unstable as they form gum upon aging in the presence of air which is directly related to oxidation of gasoline. As the oxidation occurs in the system, the molecules of oxygen decrease resulting in the pressure drop in the system. Additionally, the presence of sulfur and other organic molecules can accelerate the oxidation in gasoline. The current method ASTM D525 Standard test method for oxidation stability of gasoline (Induction period method) covers the determination of the stability of gasoline under accelerated oxidation conditions and ASTM D130 Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test was applied to determine the oxidation condition of gasoline in the presence of sulfur contamination. In this study ASTM D130 and D525 was performed to determine the oxidation properties of gasoline sample in the presence of air, moisture and additives. Scanning Electron Microscopy (SEM) imaging techniques were used to compare the rust formed in the Cu-strips during the oxidation process.

Abstract# 120 - 10/17/2018 02:30 PM - South Lobby
Ongoing Developments of ILSAC GF-6 Engine Oils Standards
Raj Shah - Koehler Instrument Company, Inc., Christin Abraham - Stony Brook University

Approximately 30 percent of the total United States GHG emissions are generated by the transportation sector. Recent updates to the Corporate Average Fuel Economy (CAFÉ) legislation require passenger cars and light trucks to attain an average fuel economy of 54.5 MPG by 2025. Upcoming ILSAC GF-6 certified engine oils will need to meet CAFÉ requirements. In this poster, the current state of ILSAC GF-6 will be discussed, including the need for a new standard, reasons for the repeated delays, improvements made over the preceding GF-5, and how close we are to first authorized use.

Abstract# 121 - 10/16/2018 01:25 PM - 1:45 PM - Exhibit Hall A4 Room

Corrosion control and chemically inert nanocoatings for use in the refining, petrochemical and analytical equipment industries.

Gary Barone - SilcoTek Corporation

Faced with growing demand to increase performance and lower costs, the refining, petrochemical, oil and gas industries are long overdue for new corrosion resistant coating technology that is more easily integrated into production. This paper will discuss silicon-based chemical vapor deposition (CVD) nanocoatings that, when applied to stainless steel and other alloys, are proven to cut maintenance costs by offering corrosion protection equivalent to exotic metals while also easing design, fabrication, and installation of coated parts. By using a gas-phase CVD process, components with complex geometries or narrow passageways such as valves, fasteners, tubing and filters can be thoroughly treated both internally and externally. The coating is molecularly bound to the base substrate, giving durability and flexibility without flaking, while the thin profile (approximately 1µm thickness) has no impact on design tolerances. The silicon-based CVD coating's performance is not directly related to thickness; rather, its advanced surface chemistry is extremely inert, greatly hindering corrosive interaction with the surface. The coatings are tailored to provide specific high-performance properties that complement their corrosion resistance, including hydrophobicity, oxidation protection above 1000° C, and coking/fouling resistance. The coatings' versatility makes them ideal solutions throughout the refinery, not to mention exploration and upstream applications. Silicon-based CVD coatings on stainless steel are cost-effective

alternatives to duplex, super duplex and super alloys that offer a myriad of additional benefits for boosting output while decreasing maintenance-related costs. Here, the silicon-based CVD coatings' material properties and corrosion performance will be examined and compared to alternative solutions. Exposure results will be demonstrated for Salt Spray, ASTM G85; Immersion, ASTM G31, in Hydrochloric acid, bleach and sulfuric acid; Pitting and crevice corrosion, ASTM G48B; and impact on Galvanic corrosion between 6061 Aluminum and stainless steel.

Abstract# 122 - 10/17/2018 03:00 PM - South Lobby
Assessment of Biodiesel Quality Test Methods Used in Middle Distillate Fuels

Raj Shah - Koehler Instrument Company, Inc, Aristidis Mihalos - Stony Brook University

In recent years, biodiesel has proven to be a good alternative fuel option on the basis of its carbon neutral footprint, sustainability, and economic viability. In the early 2000s, biodiesel regulation was insufficient and not properly integrated in the industry. Biodiesel from this time period often lead to various issues including engine clogging problems. Thus, producing high quality biodiesel is paramount to the success of a petroleum-based fuel alternative. Seeing the need in the marketplace, the National Biodiesel Board collaborated with the Vehicle Technologies Office to improve the specifications for B100 biodiesel blend stocks that are to be mixed with middle distillate fuels in ASTM D6751: Standard Specification for Biodiesel Fuel (B100) Blend Stock for Distillate Fuels. This paper serves to introduce the different biodiesel testing methods in D6751 and to elucidate the significance and limitations of each test. Additionally, the paper discusses other biodiesel test methods used in Europe and elsewhere that may be beneficial for ASTM D6751 to consider in the future.

Abstract# 123 - 10/16/2018 02:35 PM - 3:05 PM - Exhibit Hall A4 Room

Transferring Routine Lab GC Analysis to Automatic On-Line Measurement

Ulrich Gokeler - Siemens Industry, Inc.

Most industrial plants have analytical laboratories for off-line analysis. Depending on the process and task the objective is to support product quality and process trouble shooting. However, there are analysis that are repetitively performed daily or several times a day. By transferring such routine lab analyses to an automatic and on-line measurement system, there can be significant cost savings associated with it. Furthermore, measurement point dependent, because higher measurement frequency and repeatable sample conditions possibly enables improved process and quality control. This presentation will discuss upfront considerations and the possible benefits of transferring laboratory GC measurements.

Abstract# 124 - 10/16/2018 01:00 PM - 1:30 PM - Iris Room

Analytical Improvements of HRVOC Flare and Cooling Tower Measurement

Ulrich Gokeler - Siemens Industry, Inc.

The TCEQ Chapter 115 regulation in the Houston Galveston area has been implemented for more than 10 years. Among other requirements there is the need for the analytical measurement of defined olefin hydrocarbons in flare waste gas and cooling tower water. Since implementation it has been observed that many of the analytical reliability issues encountered impacting maintainability, data availability and data compliance have few common root causes. This presentation discusses commonly encountered issues for flare waste gas and cooling tower water, ranging from

filtering, flow control, validation to sample condensation and provides suggestions of beneficial remedies.

Abstract# 125 - 10/16/2018 10:10 AM - 10:35 AM - Daffodil Room

Importance of Analytical Technology Throughout the SABIC Value Chain

Christian Wold - SABIC

SABIC offers a very broad portfolio of polyolefin and engineering thermoplastic polymers and has competencies across the value chain of feedstock cracking, polymerization, material development and advanced final part design. In this presentation, the importance of analytical technology will be addressed from a technology and innovation perspective using examples throughout the value chain; Liquid feedstock streams for steam cracking are very complex in nature and detailed knowledge of the compositions provided by ICP-MS and 2DGC techniques are crucial for optimization of the cracking operations while preventing fouling from coke and metals. After cracking the slate consists of a variety of useful monomers, monitored by GC and used for further polymerization into polyolefins or engineering thermoplastics. For polymer development, information on distributions are paramount and analytical chemists unravel data on branching, co-monomer distributions and molecular weight all relatable to final application performance. Finally, as a customer focused organization SABIC works to provide solutions and innovative analytical sciences are required in the phase of trials and implementation to ensure success.

Abstract# 126 - 10/17/2018 10:00 AM - South Lobby
Analysis of Industrial Polymer Application Defects by GC×GC
Christian Wold - SABIC, Eric Brander - SABIC, Jan Willem Heuseveldt - SABIC, Jos Dekkers - SABIC

This work outlines the use of GC×GC in a practical industrial setting for polymer application development. During the development cycle of new products, some questions may arise during prototyping and upscaling that require detailed chemical characterization. The GC×GC technique is very powerful, particularly in combination with a variety of sample introduction techniques depending on the nature of the material to be examined. Equally important, the technique offers an exceptional way to visualize differences in samples, that may be reported and explained quite easily to non-chemists. This work demonstrates the applicability of GC×GC to understand the performance of polymers in applications by comparing and processing complex 2D chromatograms. For example, in a household lighting application, visual inspection of the GC×GC 2D plots and analysis of MS data were used to establish the chemical differences between four subassembly parts. Based on the GC×GC data it was possible to propose an improvement in the process of product development. In another application, polymer sheets exhibiting differences in color and light transmittance were studied by GC×GC. The obtained 2D contour plots were compared to highlight which components were likely to be responsible for the color change and transmittance alteration. Finally, the benefits and challenges of GC×GC for polymer analysis were evaluated and will be addressed.

Abstract# 127 - 10/16/2018 09:20 AM - 9:40 AM - Exhibit Hall A4 Room

Sulfur in Natural Gas

Mickey Wood - INFICON

Natural Gas is a naturally occurring gas mixture that contains fixed gases and light hydrocarbons. Natural gas is colorless and odorless, although it often contains trace amounts of sulfurs as impurities. While natural gas producers often want to remove impurities such as H₂S

(Hydrogen Sulfide) and COS (Carbonyl Sulfide), they will often introduce odorants into the gas mixture that can serve as leak indicators and warning agents. In the US, the odorant TBM (Tert-Butyl Mercaptan) is often added into the gas stream and THT (Tetrahydrothiophene) is a commonly added odorant in Europe. Precise and fast measurement of natural gas composition is critical for producers, gatherers, and natural gas manufacturers; this often includes the need for analyzing sulfurs and odorants. Micro GC Fusion configured with two channels is capable of analyzing sulfurs and odorants found in natural gas streams in less than 1 minute.

Abstract# 128 - 10/17/2018 03:30 PM - South Lobby

The effect of intermolecular forces and entropy on viscosity, vapor pressure and evaporation in hydrocarbon oils
Tom Karis - TEK Data Systems, Raj Shah - Koehler Instrument Company Inc., Andrew Zheng - Koehler Instrument Company Inc.

With technological advancements, the demand for better lubrication is always increasing. Previous studies show that viscosity and vapor pressure play a major role in determining the usability of base oils. A combination of low vapor pressure and low viscosity is fundamental in creating new more efficient lubricating base oils. However, developing an oil that consists of these two properties is a challenge; as molecular weight decreases, vapor pressure increases and viscosity decreases which causes the oil to evaporate, leading to oil loss and environmental contamination. Polarity and isomerization are two oil properties that affect the oil evaporation and flow. These properties can be modified to adjust the flow activation entropy and intermolecular dispersion force to lower the viscosity while maintaining a low vapor pressure. This poster will compare results from various studies to explore the relationship between these properties for a series of hydrocarbon oils with a range of molecular weight and polarity as well as their isomers.

Abstract# 129 - 10/16/2018 10:00 AM - 10:30 AM - Jasmine Room

GC×GC×MS of Diesel: A Three-Dimensional Separation Approach

Frank Wang - Exxonmobil Research and Engineering Co.
Diesel, a complex hydrocarbon mixture, was examined using comprehensive two-dimensional gas chromatography (GC×GC) and a field ionization mass spectrometer (FIMS), which preferentially yields molecular ions, providing an extra dimension for component separation. Molecular ions collected at low mass resolution can be assigned an NM-class (Nominal Mass-class) value that does not completely express hydrogen deficiency. In contrast to formulae and Z-class assignments that are possible from ultrahigh mass resolution, NM-class assignments are not unambiguous; however, the separation provided by GC×GC can result in coelution of components that differ in NM-class. Hence, compounds that are unresolved by GC×GC separation can be resolved by FIMS provided they differ in mass. This technique allows for easy, automated data processing, evaluation of coelution on quantitative analysis (e.g., using FID) and the identification of additional chemical species and structures. The development of GC×GC×MS creates new opportunities to improve the ability to determine hydrocarbon composition and structure in complex petroleum and refined petroleum products. We will demonstrate the power of the three-dimensional technology using diesel as an example.

Abstract# 130 - 10/16/2018 01:30 PM - 1:50 PM - Iris Room

Analysis of Gums and Distillation Residues of Gasoline for

Increased Accuracy of Particulate Emissions Prediction
Justin Pletzke - General Motors, Emily Popp - General Motors, Alex Bonkowski - General Motors, Jessica McGahan - General Motors, Mark Winston-Galant - General Motors
Particulate Matter Index (PMI) is the current standard used in the automotive industry to predict particulate emissions from gasoline-fueled vehicles. PMI takes the weight fraction, vapor pressure, and double bond equivalent (DBE) value of every component in the fuel into account, including paraffins, oxygenates, olefins, and aromatics. However, particulate emissions are largely attributed to high boiling range, high DBE value olefins and aromatics. To probe this discrepancy, gums and distillation residues of several gasoline samples were generated and analyzed by GC-TOF and AccuTOF-DART. These results will be compared to PMI of the whole fuel and particulate emissions data to determine if identifying and quantifying every component of gasoline for PMI is the most rational approach.

Abstract# 131 - 10/17/2018 01:00 PM - South Lobby

Orthogonal Selectivity for separation of light and heavy Petroleum Hydrocarbons by GCxGC
Ramkumar Dhandapani - Phenomenex
Complex sample mixtures including Petroleum hydrocarbons fractions requires detailed separation of individual class of organic compounds. A traditional GC approach will lead to multiple coelutions. In the present work, a GCxGC approach was considered to explore multi dimensional separation of complex light and heavier hydrocarbons. Due to high peak capacity in GCxGC, orthogonal selectivity of Zebron GC columns, complementary selectivity in 2 dimensions, a range of compounds including linear alkanes (n and iso-paraffins), linear alkenes (olefins), cyclic alkanes, aromatics (one-ring teralin derivatives), Aromatics (one-ring, benzene derivatives), Aromatics (2-rings naphthalene derivatives), Aromatics (2-rings, dibenzene derivatives), Aromatic (3-rings), Aromatic (4-rings), Aromatic (5-rings) were completely resolved. The column combination ZB-1HT and ZB-35 HT not only provided high temperature to elute all the fractions but also provided adequate selectivity to separate individual aliphatic and aromatics from each other.

Abstract# 132 - 10/17/2018 02:30 PM - South Lobby

Improved High Temperature Simulated Distillation (ASTM D6352 and D7169) Using Zebron™ ZB-1XT SimDist Metal GC Columns
Ramkumar Dhandapani - Phenomenex
An improved method for high temperature simulated distillation based upon ASTM D7169 is presented using the Zebron ZB-1XT SimDist column. This column utilizes a Glass Infusion™ Technology that results in more improved efficiency, resolution, and unmatched column-to-column reproducibility. This technology also allows simulated distillation methods, such as ASTM D6352 and D7169, to be extended from C100 to C120 while still meeting all the system suitability requirements. Experiments show that the proven PDMS stability for boiling point based separation, high temperature resistance and faster equilibration not only provides good separation of hydrocarbon fractions but also provides reproducible results.

Abstract# 133 - 10/17/2018 10:20 AM - 10:40 AM - Daffodil Room

Fatty Acid Methyl Ester in Fuels by GC-MS & GCxGC
Ramkumar Dhandapani - Phenomenex
Fatty Acid Methyl Esters (FAMES) are a big threat in aviation fuels as well as in biofuels. Accurate quantitation and separation of cis trans, low and higher boiling FAMES is essential from quality control perspective as well as from a safety perspective. In the present work a ZB-FAME GC column is utilized to accurately characterize FAME in Fuels

by GC MS. Traditional selectivity like a 100% Polyethyleneglycol phase may have few coelutions of FAME, while coupling ZB-Fame with Mass spec-based detection provides excellent separation of cis & trans FAME along with lower level detection. Traditional high cyano selectivity takes an hour to separate Cis/ trans FAMES, while ZB-FAME can separate them within 11 min. This approach was also extended to 2D GC using ZB-Fame in the first dimension & a 5% phenyl selectivity in the second dimension to obtain orthogonal separation. Thus analysis of fuels by GC MS & GCxGC using ZB-FAME assures safety of aviation fuels.

Abstract# 134 - 10/17/2018 11:30 AM - South Lobby
Cis- Trans FAME in Fuels by GC & GCxGC using ZB-FAME GC Column

Ramkumar Dhandapani - Phenomenex
Fatty Acid Methyl Esters (FAMES) are a big threat in aviation fuels as well as in biofuels. Accurate quantitation and separation of cis trans, low and higher boiling FAMES is essential from quality control perspective as well as from a safety perspective. In the present work a ZB-FAME GC column is utilized to accurately characterize FAME in Fuels by GC MS. Traditional selectivity like a 100% Polyethyleneglycol phase may have few coelutions of FAME, while coupling ZB-Fame with Mass spec based detection provides excellent separation of cis & trans FAME along with lower level detection. Traditional high cyano selectivity takes an hour to separate Cis/ trans FAMES, while ZB-FAME can separate them within 11 min. This approach was also extended to 2D GC using ZB-Fame in the first dimension & a 5% phenyl selectivity in the second dimension to obtain orthogonal separation. Thus analysis of fuels by GC MS & GCxGC using ZB-FAME assures safety of aviation fuels.

Abstract# 135 - 10/17/2018 09:30 AM - 9:50 AM - Exhibit Hall A4

Application of Fast GC Column Technology to On-line Process Gas Chromatography
Eric Schmidt - Dow Chemical, Anna Sandlin - Dow Chemical, Linda Heinicke - Dow Chemical, Bill Winniford - Dow Chemical, Wilco Hoogerwerf - Dow Chemical, Jasper Van Noyen - Dow Chemical, Dale Ashworth - Valco Instruments Company, Inc., Chris Bishop - Valco Instruments Company, Inc.

Understanding conversion and selectivity of gas phase hydrocarbon processes is often enhanced by the application of on-line analytical measurements to observe the chemistry in near real-time so that the end-user of the data can more easily link "cause and effect." The agility and power of liberating the technology affords end users a means to determine the conditions for optimum yield, assure process control, understand process upsets, and characterize unknown streams with urgency not possible by conventional means. On-line process gas chromatography (GC) applications are typically limited to packed column and isothermal oven technology. This presentation will describe the use of fast GC column technology as applied to process GC to gather the analytical information needed to better understand, optimize, and probe chemical problems. The results illustrate simplifying a GC method by combining multiple isothermal column trains into a fast GC unit thereby reducing method development time and improving peak resolution.

Abstract# 136 - 10/17/2018 10:30 AM - 10:55 AM - Exhibit Hall A4

Turning up the heat on WAX GC columns without getting burned
Vanessa Abercrombie - Agilent Technologies, Daron Decker - Agilent Technologies
100 % polyethylene glycol (PEG) columns, also known as

WAX columns, are used for a wide variety of applications, such as industrial chemicals and petrochemicals. Traditional WAX columns have a maximum temperature limit of 250 °C isothermal and 260 °C programmed due to issues with decreased thermal stability, reducing the potential applications range. The Agilent J&W DB-HeavyWAX has an extended temperature limit, up to 280 °C isothermal and 290 °C programmed and increased thermal stability, increasing injection-to-injection retention time reproducibility and column lifetime. The increased upper temperature limit allows for faster analysis while minimizing possibility of carryover sample to sample.

Abstract# 137 - 10/16/2018 09:00 AM - 2:00 PM - Hibiscus Room

Gas Chromatography Made Easy

Dr. Lee Polite - Axion Analytical Training Labs

Training Course: 3 Hours

Begin 9:00 AM - 11:00 AM

Lunch Break

Resume 1:00 PM - 2:00 PM

Gas Chromatography (GC) is one of the world's most popular analytical tools, yet very few people understand how it works. Analysts can push buttons, but most analysts are not quite sure why they are pushing the buttons. During this talk, we will unveil all of those mysteries and get you to understand how the underlying technology works. The best kept secret is that GC is totally understandable. By the end of this short course, not only will you understand how GC works, but you will very comfortable developing a GC method from scratch, including choosing the correct column length, diameter, film thickness, stationary phase, flow rate, inlet, detector, etc.

Abstract# 138 - 10/17/2018 09:00 AM - 9:30 AM - Exhibit Hall A4

Latest Developments in Ionic Liquid Stationary Phase Technology

Leonard Sidisky - MilliporeSigma (Supelco), Jamie Desorcie - MilliporeSigma, Greg Baney - MilliporeSigma, Kathy Kiefer - MilliporeSigma

Over the years, extensive evaluations of columns manufactured with ionic liquid stationary phases have occurred. Their main strength was discovered to be unique selectivity. This selectivity is made possible due to the various combinations of cations and anions that are available along with spacer groups used to prepare these germinal dicationic phases. Columns prepared with di- or tricationic phases have the ability to perform many of the same applications as columns made with polysiloxane polymer or polyethylene glycol stationary phases of similar polarity, but with slight elution order changes. Many times, this results in increased resolution and/or shorter run times. This paper will compare and contrast the selectivity of the ionic liquids stationary phases with traditional phases of similar or like selectivity's for applications with a variety of different sample types from a number of industries including petrochemical, pharmaceutical, environmental, food and beverage and flavor and fragrance.

Abstract# 139 - 10/17/2018 01:20 PM - 1:50 PM - Tulip Room

Thermal-Vaporization/Pyrolysis and GC/MSMS of Evolved Hydrocarbon from Source Rocks and mud-rock Reservoirs
Thomas Malloy - University of Houston-Department of Earth and Atmospheric Sciences, Mei Mei - University of Houston-Center for Petroleum Geoche, Jeffery C. Wright - University of Houston- Center for Petroleum Geoche, Adry Bissada - University of Houston- Center for Petroleum Geoche
Sound petroleum-resource assessment requires determination of petroleum generation potential, oil-in-

place, and molecular characterization of that oil. Traditionally, this has been done by RockEval pyrolysis and solvent-extraction with subsequent SARA/GC/GCMS analysis. Rotovap of extracts and SARA fractions results in loss of light ends and other fractionation problems. A new approach using the Frontier Laboratories' thermovaporization-multishot pyrolyzer, interfaced with cryo-trapping and Agilent's GC-FID-MSD system, was recently developed to measure and characterize evolved products. Unfortunately, complexity of these released analytes deterred customary molecular characterization. More recently, the problem was overcome by utilizing pyrolysis GC/MSMS system and our new whole-oil analysis method.

Abstract# 140 - 10/17/2018 11:00 AM - South Lobby
Purity Measurement of Cyanogen Chloride using GC/MS and GC-ICP-MS

William Geiger - CONSCI, Ltd.

Cyanogen Chloride (aka CK) is a compound that has been proposed for use in chemical warfare. It is a blood agent causing injury to the respiratory system and eyes. It is especially dangerous because it can penetrate many filters in gas masks. Because of this attribute, it is used as a test gas for evaluating gas mask filters. Government standards require 90% to 95% purity for test purposes. Conventional GC detectors are not capable of this quantitation accurately. Using GC/MS for identification and GC-ICP-MS for quantitation a comprehensive analysis can be accomplished.

Abstract# 141 - 10/17/2018 02:00 PM - 2:30 PM - Exhibit Hall A4

Estimating Particulate Matter Index for Gasoline with Fast Gas Chromatography – Vacuum Ultraviolet Spectroscopy
Jack Cochran - VUV Analytics, Sean Jameson - VUV

Analytics, Dan Wispinski - VUV Analytics, James Diekmann - VUV Analytics

Particulate Matter Index (PMI) indicates how fuel quality contributes to particle number emissions in automobiles. Because gasoline is complex, GC-FID detailed hydrocarbon analysis (DHA) is used to separate and quantify individual compounds, followed by calculation of their contributions to the PMI. DHA GC run time and post-processing data review can be lengthy.

GC with vacuum ultraviolet (VUV) spectroscopy (modified ASTM D8071) offers a faster way to estimate PMI. Because of their unique absorbance spectra, the low-volatility mono- and di-aromatics responsible for most of the PMI are easily quantified with VUV, even in the presence of interfering isoparaffins, olefins, and naphthenes.

Abstract# 142 - 10/16/2018 09:00 AM - 9:20 AM - Exhibit Hall A4 Room

Extended Analysis of Natural Gas using a Micro GC
Vince Giarrocco - INFICON

A method for C9+ extended analysis of raw unprocessed natural gas streams using a Micro GC is described. Extended analysis refers to reporting the C6+ as groups including hexanes (C6), heptanes (C7), octanes (C8) and nonanes plus (C9-C12), in addition to measurements of N2, methane, CO2 and C2-C5. The INFICON Micro GC Fusion with a sampling conditioner, fixed volume injectors, temperature programmed columns, and TCD was used for this work. Example chromatograms, data and optimization are discussed. With fast analysis/simple operation the method is suited for measurements made in the field or lab, meeting GPA specifications and BLM on-shore guidelines.

Abstract# 143 - 10/17/2018 09:00 AM - 9:30 AM - Daffodil Room

CFR Innovations by StanCo Scientific, Inc.

Jeremy Majewski - StanCo Scientific, Inc.

We will be doing a presentation to cover the newest innovations of CFR technologies by StanCo Scientific. Pieces included will be: Digital CFR Panel, Digital Temperature Controller, and Digital Detonation Meter. The digital CFR panel is an upgrade to customers with legacy CFR panels. The alternative digital temperature controller correctly controls the inlet air and mixture temperatures. The digital detonation meter is an upgrade to existing 501-C detonation meters throughout the industry. These innovations provide modern solutions to aging equipment throughout the fuel testing industry all with the customer needs and budget in mind.

Abstract# 144 - 10/16/2018 09:00 AM - 9:20 AM - Daffodil Room

Digital Copper corrosion measurement vs. Visual rating _ Incorporating new technologies to method development
Aaron Mendez - Ayalytical Instruments, Juan Ayala - Ayalytical Instruments

Crude oils and Petroleum products contain sulfur in many different compound types that are associated with the increase of corrosiveness with the well know negative impact on operation efficiency. Ayalytical Instrument has developed a series of instruments based on digital detection imaging and a classifying visual algorithm displays automatically very accurate, corrosion ratings in seconds with an extraordinary repeatability. Test Method D130 is an important test method that measures corrosion on a standardized copper strip and is cited in numerous product quality specifications. The revision of D130 to incorporate an automatic rating procedure is part of the natural technological method development that has been observed in ASTM ever since its foundation. The revision brings numerous advantages to the current biased corrosion assessments in terms of unambiguity, speed of analysis and precision, which are undoubtedly beneficial. There a series of concerns however that need to be clarified before a ballot action of this sort passes the D2 Committee balloting process. Among these concerns perhaps the documentation of the new procedure and its correlation to the current visual procedure is one of the most important one. Experimental Results to be presented will address the issues of correlating the automatic procedures to the conventional visual rating.

Abstract# 145 - 10/16/2018 10:45 AM - 11:05 AM - Tulip Room

Automating Spectroscopy Calibrations

Brian Rohrback - Infometrix, Inc.

A consortium of companies has undertaken a project to reduce the effort devoted to producing, maintaining, and stabilizing optical spectroscopy performance in routine quality assessment. Over a five-year period, the group has examined an unprecedented historical collection of spectra from multiple spectrometers spanning 1-5 years from sixteen oil refineries, with the goal of developing and maintaining stable models for long-term deployment. Even though the data are tied to petroleum work, the lessons learned are true for all applications. The technologies utilized follow a pattern of best practices, including the use of Robust outlier diagnostics, local and hierarchical modeling, and model augmentation. The effort has resulted in significant progress towards automation of model creation, stability, and maintenance in an industrial process. Additionally, we will share a comparison of prediction capabilities of different spectroscopy technologies and form-factors that can lead to a significant reduction in deployment and maintenance cost.

Abstract# 146 - 10/17/2018 01:00 PM - 2:00 PM - Iris Room

DSC and TGA 101: Introduction to Thermal Analytical Techniques

John Erne - NETZSCH Instruments

Differential Scanning Calorimetry (DSC) is the foundational technique for understanding phase transitions in materials, compounds and mixtures. Along with GC, MS and FTIR it is the among the most commonly used analytical technique in the oil and gas, chemicals and polymers industries. Thermogravimetric Analysis (TG or TGA) provides compositional information composition of solid and liquid materials and is the primary method for determining thermal stability. It can also be easily coupled to GC-MS and FTIR as a more advanced alternative to Headspace or Pyrolysis systems.

This training session will focus on the application of these techniques to both the QC and R&D environments -- where do they fit into the analytical toolbox in your day-to-day operations?

Abstract# 147 - 10/17/2018 10:00 AM - 10:30 AM - Hibiscus Room

Integrated Informatics: Real-time Evaluation of Results for Process Monitoring

Larry West - Thermo Fisher Scientific

One of the greatest ongoing challenges for the oil and gas and petrochemicals industries is the automation of laboratory data capture and analysis. While elimination or reduction of manual processes related to data management leads to considerable product quality improvements, these efforts can also improve compliance with increasingly complex industry guidelines and environmental regulations. Integration of systems such as LIMS with a CDS enables quicker evaluation of results for process monitoring to ensure that changes can be made in a timely manner before products are lost. Thermo Scientific™ Chromeleon™ XPS Open Access software provides a streamlined, walkup interface enabling users to harness the full power of Thermo Scientific™ Chromeleon™ CDS with minimal training and effort. With an out-of-the-box direct Thermo Fisher™ SampleManager LIMS™ connection, Chromeleon CDS sets the industry standard for robustness in a networked environment and delivers secure multi-vendor instrument control. Learn how Chromeleon software continues to deliver superior laboratory and instrument support through comprehensive control of Thermo Scientific™ IC, GC, LC, MS and over 525 instruments from 20 manufacturers. Join us for our live demonstration.

Abstract# 148 - 10/16/2018 09:20 AM - 10:00 AM - Jasmine Room

Advances / Applications of Separations in the Mass Spectral Characterization of Petroleum

Ryan Rodgers - National High Magnetic Field Laboratory, Jie Lu - National High Magnetic Field Laboratory, Steve Rowland - National High Magnetic Field Laboratory, Donald Smith - National High Magnetic Field Laboratory, Martha Chacon - National High Magnetic Field Laboratory, Rebecca Ware - National High Magnetic Field Laboratory, Alan Marshall - Florida State University, Sydney Niles - Florida State University

High field FT-ICR mass spectrometry has changed the utility and expectations of complex mixture analysis by mass spectrometry over the past decade. The inherent high resolving power and high mass accuracy enable direct determination of elemental compositions to tens of thousands of individual components by mass measurement alone. However, to obtain structural information, separations are often required. Here we highlight GC x GC, prep LC, and online LC/MS techniques in

petroleum/environmental science and discuss recent advances that enable an increased compositional and structural characterization of complex petroleum samples for upstream, downstream, and environmental applications.

Abstract# 149 - 10/17/2018 11:15 AM - 11:40 AM - Tulip Room

Analytical methods for determination and quantification of olefins/diolefins in cracked petroleum streams
Rafal Gieleciak - Natural Resources Canada, Kirk Michaelian - Natural Resources Canada, Nicole Heshka - Natural Resources Canada, Cecile Lay - Natural Resources Canada, Jinwen Chen - Natural Resources Canada
Olefins and diolefins, highly reactive hydrocarbon compounds often found in cracked petroleum products, may be responsible for the formation of gums and solid deposits in storage tanks as well as in refining equipment (fouling). Several specifications are in place to regulate the levels of olefins in both unprocessed and finished petroleum products. This creates an imperative need for the ability to rapidly monitor and quantify olefin content in petroleum products. The current specifications for total olefin and diolefin content are set by a standardized 1H-NMR method and the UOP -326 diene value, respectively. These methods have several shortcomings including long analysis times and the need for expensive equipment. Furthermore, neither test provides any details on the type or distribution of olefins present in cracked petroleum streams. This presentation will review and compare existing methods used for olefin determination, as well as describing new methods that are currently under development at CanmetENERGY in Devon. These new methods include infrared and Raman spectroscopy, one and two-dimensional gas chromatography with vacuum ultraviolet and nitrogen chemiluminescence detectors, high-performance liquid chromatography, solid phase extraction, and derivatization methods. The principles and procedures of each method, as well as their advantages, limitations and applications to specific petroleum products, will be discussed.

Abstract# 150 - 10/16/2018 01:00 PM - 1:40 PM - Jasmine Room

Comprehensive Two-dimensional Gas Chromatographic (GC×GC) Petroleum Fingerprinting Utilizing Traditional and Non-traditional Biomarkers and High Resolution Time of Flight Mass Spectrometry Petroleomics Spectral Analysis Tools
Robert Nelson - Woods Hole Oceanographic Institution, Christopher Reddy - Woods Hole Oceanographic Institution
In order to perform detailed studies on the source, transport, and ultimate fate of acute and chronic releases of petroleum hydrocarbons, high-resolution separations of target and non-target compounds and compound classes from complex mixtures such as petroleum frequently require techniques with high resolving power. Comprehensive two-dimensional gas chromatography (GC×GC) coupled with flame ionization detection (FID), time of flight mass spectrometry (TOF-MS), and high-resolution time of flight mass spectrometry (HRT-MS) are three of the high-resolution tools employed in our laboratory for high fidelity chromatographic separations of useful biomarker compounds (molecular fossils) for petroleum forensics. Here we present a number of examples of crude oil fingerprinting examples utilizing traditional and un-traditional oil spill forensic compounds in order to gain a more complete understanding of (a) which compounds persist in the environment and (b) how we can use high resolution techniques to forensically identify specific petroleum sources.

Abstract# 151 - 10/17/2018 09:55 AM - 10:25 AM - Tulip Room

LV LIMS Industry accelerator assists in implementing Oil and Gas labs best practices into production faster
Dan Call - LabVantage Solutions, Inc.
LabVantage continues to add to its many LV LIMS pre-configured industry accelerators, and recently rolled out a new industry accelerator for the Oil and Gas industry. This accelerator is based on years of experience in the oil and gas industry, coupled with feedback and lessons from our customers. Whether you operate a lab in support of a refinery, corporate R&D / Technical Services, or a lab that services the oil and gas industry, LV will describe how to get your LIMS into production faster. In closing, you will get a chance to see LV LIMS Oil and Gas live.

Abstract# 152 - 10/17/2018 02:50 PM - 3:20 PM - Exhibit Hall A4

Fast Analysis of Non-Traditional Gasoline Additives with Gas Chromatography – Vacuum Ultraviolet Spectroscopy
Ryan Schonert - VUV Analytics, Dan Wispinski - VUV Analytics, Jack Cochran - VUV Analytics
Non-traditional gasoline additives (NTGAs) like ethyl acetate are being researched as beneficial octane-booster replacements for ethanol and methyl tert-butyl ether. Other octane-enhancing NTGAs, including acetone and N-methylaniline which can degrade automobile engine performance, are sometimes used illegally in gasolines outside the United States and Europe. Unfortunately, monitoring programs relying on ASTM D6730 (Detailed Hydrocarbon Analysis) and ASTM 6839 (Multidimensional Gas Chromatography) do not include most NTGAs in their scope. Gas chromatography (GC) with vacuum ultraviolet spectroscopy (VUV) offers an easy way to accurately quantify NTGAs in gasoline with authoritative absorbance spectra confirmation of their presence. GC-VUV run time is less than 34 min and data processing is fully automated.

Abstract# 153 - 10/17/2018 10:00 AM - South Lobby

Precision Comparison Between ASTM Sulfur Test Methods D7039, D2622, and D5453
Joseph Iaiia - XOS, Leslie Johnson - XOS
Tighter regulations on sulfur concentrations have furthered the need for refineries to maximize the precision of their sulfur analysis methodology. Accurate measurements let refiners produce product closer to the specification maximums which saves money by reducing refining costs. With several methodology options for sulfur analysis available, refineries, terminals, and test inspection certification companies must take care to select a method that produces the least amount of variability. This paper reviews and discusses 3 years of ASTM PTP data for ULSD and RFG to compare test methods D7039, D2622, and D5453. The paper specifically takes a close look at the reproducibility results in the critical sulfur concentration range of 5 – 15ppm to determine which test methods offer users the least variability when running measurements according to the three ASTM methods of interest.

Abstract# 154 - 10/16/2018 02:35 PM - 3:35 PM - Iris Room

Method Development and Validation Strategy for The Karl Fischer Titration Process
Bruce Herzig - MilliporeSigma
Karl Fischer titrations are used throughout the chemical industry for evaluating moisture content of products and raw materials. This presentation will demonstrate techniques to evaluate the solubility of a sample in the Karl Fischer reagent solution and make proper choices in co-solvent to ensure an accurate and reliable titration. After

developing a suitable solvent system, the titration must be validated and techniques for method validation will be discussed as well.

Abstract# 155 - 10/16/2018 09:00 AM - 9:20 AM - Jasmine Room

A Comparison of Thermal and Flow Modulated GCxGC with dual FID-MS for Aviation Fuels
Richard Striebich - University of Dayton Research Institute, Linda Shafer - University of Dayton Research Institute, Zachary West - University of Dayton Research Institute, Steve Zabarnick - University of Dayton Research Institute
Hydrocarbon type analysis has become an important technique in the screening and evaluation of jet fuel quality and alternative fuel suitability. GCxGC is routinely used to characterize fuels for hydrocarbon type; it incorporates both quantitative FID and qualitative MS identification with flow modulation. The simultaneous FID-MS is convenient since compound class groups are more easily characterized on the MS channel and then immediately applied to the FID for quantification. Recently, thermal modulation with dual FID-TOFMS has been developed for column systems similar to the flow modulation system; results are being compared for the two different modulators for hydrocarbon type of petroleum and alternative fuels.

Abstract# 156 - 10/17/2018 10:00 AM - 10:20 AM - Daffodil Room

Using Static Headspace GC-VUV to Detect Methanol in Crude Oil
James Diekmann - VUV Analytics, Ryan Schonert - VUV Analytics, Dan Wispinski - VUV Analytics, Jack Cochran - VUV Analytics
Methanol is used in the production of crude oil to prevent formation of gas hydrates. Residual methanol in crude oil can lead to costly problems in refinery operations, especially with wastewater treatment. Typically, direct-injection multidimensional gas chromatography is used to determine methanol in crude oil via ASTM D7059. Static headspace gas chromatography – vacuum ultraviolet absorbance spectroscopy (SH GC-VUV) offers an attractive alternative to the complex hardware setup for ASTM D7059. A working concentration range of 5 to 1000 ppm can be achieved, with VUV spectral confirmation of methanol in crude oil. Headspace analysis eliminates the GC inlet and column lifetime problems associated with ASTM D7059.

Abstract# 157 - 10/16/2018 09:40 AM - 10:10 AM - Exhibit Hall A4 Room

Analysis of low hydrocarbon mixture from C1 to C5 by Gas Chromatography with Valco on-column heating technology in 20 seconds
Dale Ashworth - Valco Instruments Co. Inc., Huamin Cai - Valco Instruments Co. Inc., Martin Brisbin - Valco Instruments Co. Inc., Chris Bishop - Valco Instruments Co. Inc., Matias Hochman - Valco Instruments Co. Inc., Robert Simpson - Valco Instruments Co. Inc., Yashas Rathod - Valco Instruments Co. Inc., Doug Dailey - Valco Instruments Co. Inc., Marcus Pereira - Valco Instruments Co. Inc., Stanley Stearns - Valco Instruments Co. Inc.
Mud logging provides important data to the exploratory drilling industry, traditionally this data is provided by an isothermal GC method, and while the results were reliable and helped to correlate understanding of depth and content, the method was slow. An improved method using a rapid heating technology to temperature program the analytical column can achieve significantly quicker analysis, and much improved separation of sample constituents. This technology greatly reduces the heating/cooling cycle time, while also providing much higher resolution. This Valco developed technique uses cold on-column

injection, with an extremely accurate and fast heating technology with a unique temperature measurement/application method. This technology greatly reduces not only the heating and cooling times, but also the size and power required for instruments doing this analysis. This temperature control technology is not limited to columns, but can be applied to injectors, transfer lines, and other components as required. The application of this technology can provide higher throughput and higher resolution well beyond the capability of traditional GC techniques. The total cycle time for this enhanced C1 to C5 analysis with seven components is less than 20 seconds with a total recycle time less than 45 seconds. In this presentation we will describe the details of this technology, its configuration, and our test results.

Abstract# 158 - 10/17/2018 10:40 AM - 11:00 AM - Daffodil Room

Improved Identification Of Components in Hydrocarbon Samples Through Enhanced Capabilities of a Low Energy EI High-Resolution Mass Spectrometer
Courtney Milner - Agilent Technologies, Kai Chen - Agilent Technologies, Sofia Nieto - Agilent Technologies, Nathan Eno - Agilent Technologies
Compound identification in complex hydrocarbon samples is challenging, complicated by wide boiling point ranges, multiple isomers and often similar structures. Comprehensive GCXGC has been demonstrated to be a useful tool including detection via FID and MS. More recently the benefits of accurate mass have been shown to aid identification. This presentation will discuss using the consumable free Agilent reverse fill flush flow modulator, with detection via an Agilent 7250 GCQTOF with low energy EI capabilities. Data will be presented to demonstrate the additional information that low energy EI spectra, accurate mass and MS/MS capabilities brings to these complex sample analysis

Abstract# 160 - 10/17/2018 10:40 AM - 11:00 AM - Orchid Room

Fully automated Trace Level gas generation and its application for calibration, linearization, LOD validation in hydrocarbon analysis.
Laurent Courthaudon - AlyTech
Preconcentration is more and more used in environmental analysis, and more widely in trace level analysis. Unknown sample have been treated that way for many years. However, the calibration of the analyzer itself has been an issue. Calibration with concentrated gases injected directly into the analyzer and unknown samples analysis through a preconcentration process may yield to a significant bias. The presentation will describe an automated, multipoint, low level calibration gas preparation device, including heavy compounds which are not available in gas cylinders. Different applications such as the determination of hydrocarbon contaminants in hydrogen fuel, ambient air analysis, trace of sulfur in gases, etc. will be described.

Abstract# 161 - 10/17/2018 11:00 AM - 11:20 AM - Orchid Room

Recent Advances in Catalysis for the Measurement of CO, CO₂, and Formaldehyde
Rajvi Mehta - Activated Research Company
The measurement of CO, CO₂, and formaldehyde is important across many industries, including renewable fuels, transformer oil gas analysis, and food & beverage. Historical techniques for this analysis have included the use of a TCD or a Ni-catalyst methanizer paired with an FID, however these techniques suffer from poor linear range and robustness, respectively. In recent years, advances in catalysis have allowed for a new analytical technique to

emerge, the Jetanizer. The Jetanizer, which uses novel catalysts and a stainless-steel 3D printed design, allows for in-situ methanation with the FID for a simplified approach and a linear dynamic range of over six orders of magnitude.

Abstract# 162 - 10/17/2018 10:00 AM - South Lobby
Diesel Fuels and Additives – Interference-free Determination of Total Sulfur with the Patented MPO Technology
Stefan Jezierski - Analytik Jena AG, Oliver Buettel - Analytik Jena AG

The determination of sulfur contents is an integral part of the process optimization and quality control in refineries, petro-chemistry and many other industry branches. The most reliable and flexible method is the thermal decomposition with a subsequent UV fluorescence detection of the produced SO₂ (EA). It is characterized by a superb detection sensitivity, long-term stability, and application flexibility. But there is one downside, the cross-sensitivity to NO. We describe a reliable technique for the interference-free sulfur determination. All measurements have been performed on compEAct SMPO elemental analyzer.

Abstract# 163 - 10/17/2018 10:30 AM - South Lobby
Analysis of Toxic Metals and TOC in Process and Waste Waters of the Petrochemical Industry
Bernd Bletzinger - Analytik Jena AG, Oliver Buettel - Analytik Jena

The petrochemical industry generates large volumes of waste water or effluents that must be treated before it can be reused or released into natural waterways. Toxic heavy metals like Cadmium, Chromium, Lead and Mercury are typically monitored in process waters and effluents of petrochemical plants by Atomic Spectrometry range. Moreover, the total organic carbon (TOC) and the total bound nitrogen (TNb) content is routinely determined as these contaminants lead to eutrophication of surface water courses, endangering aquatic life and ground water supplies.

For all these parameters the high concentrations of suspended solids (TDS) in waste waters can affect the direct analysis. Hence, the choice of the appropriate technique will depend on the digestion approach and sensitivity/throughput for TOC/TNb and AAS, ICP-OES and ICP-MS, respectively.

Abstract# 164 - 10/16/2018 01:00 PM - 1:20 PM - Tulip Room

Ultrafast Gas Chromatography: The Journey to Credibility
John Crandall - Falcon Analytical

Ultrafast gas chromatography has come a long way since the first of these Gulf Coast Conference symposia seven years ago. From invention to patents to applications including an ASTM method, to the roll out to wineries, refineries, petrochemicals, chemicals and upstream to the wellhead, Ultrafast GC has become mainstream. In labs, online and even transportable platforms, the Ultrafast GC platform expansions including 16 meter column modules for up to 32 meters total length and the newest inventions enabling 3 different column types using a single switching valve broadens applications even more. This year the symposium of 7 presentations will take a step back to make an assessment of the breadth and depth of applications and the developments making them possible.

Abstract# 165 - 10/16/2018 02:40 PM - 3:00 PM - Tulip Room

When Length Alone Isn't Enough: A Novel Two Module, Three Column Configuration (patent pending) for H₂, O₂, N₂ and Hydrocarbons

Nathan Caton - Individual

In labs and pilot plant settings it is often necessary to have

near assay-like analytics for very broad boiling range components. The selectivity necessary for fixed gas components requires sensitive column material like ShinCarbon. And to get both low boiling and higher boiling hydrocarbons requires either extreme lengths or two different column types. This paper will discuss the first commercial application of the new technology delivering very broad boiling range distribution analysis in a single Ultrafast GC.

Abstract# 166 - 10/16/2018 03:00 PM - 3:20 PM - Tulip Room

Parts per Million, Parts per Billion, How about Parts per Trillion?

Matt Holliday - Falcon Analytical

Ultrafast gas chromatography brings capability to analytical chemistry that is unapproached by other technologies when it comes to selectivity, sensitivity and reliability. Some applications require very low concentration measurements with very high confidence that the measurement is valid and interference free. While environmental air monitoring is usually the first application that comes to mind for low level measurements, industrial hygiene applications require certain results without false positives or false negatives. This is critically important for employee safety. Examples of various levels of detection will be shown along with the technique used to meet the requirements.

Abstract# 167 - 10/16/2018 02:00 PM - 2:20 PM - Tulip Room

Ultrafast Simulated Distillation in the Refinery Laboratory: The Skeptics become the Believers

Shauna Teclerian - US Oil Refining

As a producer of all grades of fuel to the Pacific Northwest and beyond, our products must of course be properly validated. Simulated distillation is a key technology to make sure all processes leading to all products meet the boiling range distribution requirement. With the multitude of grades and products now including biofuels, our workload has greatly expanded. One of our responses has been to deploy the ultrafast ASTM D7798 in place of the D2887 method. The ultrafast technology improved throughput by a factor of (put your number here). While there were many skeptics in the beginning our operations group is now asking for results "from the Falcon... now not later" on a daily basis and especially during upset conditions. Example of chromatograms obtained daily will be shown as well as ideas for the next step.

Abstract# 168 - 10/16/2018 01:40 PM - 2:00 PM - Tulip Room

Chromperfect: Peak Integration? Of course but Automation, Software and Data Integration Too!

George Schreiner - ChromPerfect

The power of standard Ethernet connectivity, application software and inexpensive yet powerful computing hardware empowers modern chromatography data systems to do much more than peak detection & integration, calibration and reporting. Seamless commercial software like LineUp and InStep via simple menu, tab-based execution brings powerful data assessments. Ethernet I/O controls via Chromperfect Process Control brings simple logic to electronic to pneumatic programmed control of timed events, inside and outside the method structure. And for deployment by non-expert users, addition of Chromperfect Marker Trace makes sophisticated analytical gas chromatography "point and click" easy. This paper will show real world examples of how modular software complements modular Ultrafast Gas Chromatography hardware.

Abstract# 169 - 10/16/2018 01:20 PM - 1:40 PM - Tulip Room

Optimizing Gas Chromatography

Brian Rohrback - Infometrix

The heartbeat of the process environment is in the data we collect, but we are not always efficient in translating our data streams into actionable information. The richest source of hydrocarbon process information comes from spectrometers and chromatographs and, for many applications, gas chromatography is the cheapest, most adaptable, and most reliable technology available. We can use tech borrowed from other fields to provide more consistent and objective GC results, automate translation of the raw traces into real-time information streams, and create databases that can be used across plant sites or even across industries.

Abstract# 170 - 10/17/2018 10:00 AM - South Lobby

Total Sulfur and Nitrogen Analysis Using a Multi-Layer Combustion Tube

Anne Jurek - EST Analytical, Cory Black - EST Analytical

Crude oil is composed mainly of hydrocarbons mixed with a variation of nitrogen, sulfur and oxygen. The differences in the nitrogen, sulfur, and oxygen content can be attributed to where the crude oil originates. After drilling, crude oil is usually refined in order to create fuel, lubricants, etc. Due to the use of processing catalysts in the refining method, trace amounts of sulfur and nitrogen can be very detrimental. Thus, determining the nitrogen and sulfur content is very important. This application will examine total sulfur in light hydrocarbon samples using the NexiS combustion elemental analyzer complete with a new and novel multilayer combustion tube.

Abstract# 171 - 10/16/2018 09:30 AM - 9:55 AM - Tulip Room

Real-Time Monitoring of Key Jet and Diesel Parameters Via Raman Spectroscopy

Lee Smith - Process Instruments, Inc.

Improving distillate throughput in a refinery is an ongoing battle since the difference between the specifications and the measured properties directly effects profitability. Blending distillate fuels is tricky because there are typically many blend components coming from different units within the refinery, i.e. Crude Distillation Unit, Hydrocracker, Vacuum Distillation tower, and Hydrotreater to name a few. It is important to carefully monitor these rundown streams in real-time to optimize fuel properties while maximizing profitability. Raman spectroscopy and its narrow, well defined spectral peaks has demonstrated an ability to easily monitor key distillate fuel blend and finished stream properties in real-time. For Jet, this includes properties such as: Freeze, Flash, Smoke points, and distillation points. Raman's enhanced sensitivity to aromatics makes measuring Smoke point very simple. All of these tests can be run in < 2 minutes. With Diesel, Raman can easily monitor Cetane, Cloud, Flash and Pour Points in addition to Aromatics, distillation points and total sulfur. Our use of best-practices PLS chemometric modeling and hierarchical models allows refiners to optimize model performance throughout their distillate blends. This type of close monitoring affords refineries opportunities for blending extra naphtha and even heavy stocks directly into diesel and Jet for increased profitability.

Abstract# 172 - 10/17/2018 01:00 PM - 2:00 PM - Jasmine Room

Integrating Perma Pure's Nafion Gas Sample Dryers into Your Analyzers and Scientific Experiments

Gene Bohensky - Perma Pure

Over the past 40 years Nafion Gas Sample Dryers have

been installed in a wide range of analyzers and sample conditioning systems to remove moisture from gas streams for a wide range of analysis applications. In this timeframe many approaches to implementing these dryers have been developed and deployed across a wide spectrum of operating conditions. In reviewing these deployment methods and their subsequent performance, a number of best practices have been established.

The training course will start with the basics of how Perma Pure Nafion Gas Sample Dryers work and will quickly move into how they can be applied to common applications, using the best practices that have been developed based our experience. The end result is to offer designers of equipment and end users tools to make deployment of Nafion Gas Sample Dryers more cost effective and reliable in their analyzers, systems, and experiments.

Abstract# 173 - 10/17/2018 12:30 PM - 1:00 PM - Hibiscus Room

Method Optimization for the Analysis of Challenging Organic Samples by ICP-OES

Sabrina Antonio - Thermo Fisher Scientific

Elemental analysis of organic solvents, lubricating oils, fuels, petrochemicals and food oils is imperative across numerous industries. For instance, analysis of lubricating oils for wear metals and additives is a powerful diagnostic tool in determining preventative maintenance of engines and machinery before costly failures.

Analysis of organic samples presents challenges in ICP-OES due to viscosity, volatility, and high carbon content. Careful selection of sample introduction components, operating parameters and solvents must be considered. This presentation provides tools for method development and data from application notes demonstrating that simplified analysis can be achieved for challenging organic samples.

Abstract# 174 - 10/17/2018 10:30 AM - South Lobby

Detection of the Onset of Aggregation as a Function of pH of Iron Oxide Nanopowder by Dynamic Light Scattering

Lauren Szwest - Brookhaven Instruments Inc.

Given the great potential for applications using iron oxide, it is beneficial to understand the effect of chemical changes to the surface of the nanoparticle. The aim of this study was to determine if the onset of aggregation could be detected with a change in pH. The suspension was tested from a pH of 2 to 12 in 2 pH unit steps. The solution was analyzed using dynamic light scattering (DLS). The onset of aggregation was detected between pH 4 and 6. It was clear that as the pH value increased, the effective diameter increased and the stability decreased.

Abstract# 175 - 10/17/2018 11:00 AM - South Lobby

Micellar Water Characterization: A Laser Light Scattering Application

Dana Castro - Brookhaven Instruments

When an aqueous solution has a certain amount of surfactant molecules, micelles are formed. The hydrophilic heads of the surfactant molecules orient themselves toward the water molecules while the hydrophobic tails orient towards each other, avoiding contact with water. These spherical aggregates are widely used in drug delivery, cosmetics, water treatment, detergents, and more. In order to determine if light scattering could be used to characterize commercial micellar waters, different brands were measured with laser light scattering. Size, charge, and rheological properties were all determined using a Brookhaven Instruments NanoBrook Omni. Results showed differences among brands and formulations.

Abstract# 176 - 10/17/2018 10:45 AM - 11:15 AM - Tulip Room

Analyzing Live Crude: Complete C1 to C100. How much information can we get?

Chris Goss - Innotech Alberta, Amanda Prefontaine - Innotech Alberta, Lee Marotta - PerkinElmer

A "live" crude is when the sample is preserved so that the more volatile components are not lost in collection and in sample transfer. This is critically important for light crudes where the sample has a significant amount of lower boiling components, thus providing more accurate boiling point distribution.

ASTM D7169 (high temperature simulated distillation), does not analyze a live crude oil. ASTM D8003 injects a live crude oil but it only provides information from nC1 to nC24 due to inlet discrimination.

Using a High Pressure Liquid Injection System (HPLIS) in conjunction with micro fluidic valves a complete analysis from nC1 to nC100 can be achieved.

Abstract# 177 - 10/17/2018 10:30 AM - 11:00 AM - Hibiscus Room

Determination of Moisture Content In Liquefied Petroleum Gases By Gas Chromatography

James Pachthofer - Thermo Fisher Scientific

Using Gc To Measure The Moisture Content In Hydrocarbons Has Been A Very Difficult Analysis. Traditional Methods, Such As Karl Fischer Or On-Line Analyzers, Require Additional Equipment And Procedures, Adding Time And Complexity To The Sample Measurement. Attempting To Use Gc Suffered From Poor Separation From Hydrocarbons, Inadequate Sensitivity To The Water Peak With Tcd, And Poor Repeatability From Sampling Issues. Recent Advances In Gc Column Technology, Coupled With A High Sensitivity Universal Detector, And Certified Commercially Available Standards Now Allow Gas Chromatography To Provide Sensitive, Specific, Analysis Of The Moisture Content In Lpg. This Presentation Will Highlight The Use Of A Thermo Fisher Scientific Model 1310 Gas Chromatograph Equipped With A Pulse Discharge Detector And A Liquid Sample Valve To Separate And Quantify Moisture In The Lpg. Separation Of The Moisture Peak From The Hydrocarbon Matrix Is Achieved Using A Capillary Column With A Highly Polar Liquid Crystal Phase. Use Of Commercially Prepared Standards In Constant Pressure Cylinders Together With The Lsv On The Gc Provide Excellent Precision And Repeatability Of The Analysis.

Abstract# 178 - 10/17/2018 02:30 PM - 3:00 PM - Hibiscus Room

New Columns and Consumables to Solve Challenges in Ion Chromatography

Kirk Chassaniol - Thermo Fisher Scientific

In this session we will present an overview of new columns, consumables and software features for Ion Chromatography (IC). Challenges in separations of contaminants in various process waters will be discussed using new 4um HPIC columns. IC methods involving sample preparation can be improved through new automated sample preparation products and combustion IC techniques. We will present examples of Chromeleon software features of interest to IC users in the oil and gas industry.

Abstract# 179 - 10/17/2018 09:00 AM - 10:00 AM - Hibiscus Room

Streamline your laboratory workflow with Thermo Scientific Chromeleon CDS

Greg Whitaker - Thermo Fisher Scientific

In today's analytical laboratories the demand to increase throughput with fewer experienced analysts can be overwhelming. Learn how Thermo Scientific Chromeleon CDS offers tools to simplify the analysis of your routine samples to efficiently achieve fast results with minimal user interaction. Find out how Chromeleon's seamless integration with SampleManager LIMS can provide your laboratory with an integrated informatics solution, resulting

in a fast, streamlined, automated workflow from sample to knowledge. And find out how your Chromeleon system, whether a single workstation or a complex multi-site enterprise deployment, can provide maximum up-time and availability to ensure your lab keeps producing the results to keep your plant productivity high.

Abstract# 180 - 10/17/2018 01:00 PM - 1:20 PM - Tulip Room

Advances in Benchtop Wavelength-Dispersive X-Ray Fluorescence Spectrometry - For Petrochemical Applications!

Dan Pecard - Bruker AXS

When designing a new Benchtop Wavelength Dispersive Spectrometer (WDXRF) for process control applications for the petrochemicals industry, the goal is set: Maximize Intensity and Enhance Versatility.

During this presentation we will discuss the advances and advantages with a 400W Benchtop WDXRF and show example applications ASTM D2622 and ASTM D6442.

Abstract# 181 - 10/16/2018 09:50 AM - 10:10 AM - Iris Room

Analysis of Fuels by ICPOES - Avio200

Robert Forester - PerkinElmer

The analysis of fuels is important to verify process control and quality of product. In this talk we will discuss the multi-element determination of fuels running ASTM method D7111 with the PerkinElmer Avio 200 inductively coupled plasma optical emission spectrometer (ICP-OES).

Abstract# 182 - 10/17/2018 9:50 AM - 10:10 AM - Exhibit Hall A4

CNS SIMDIS - Boiling point distribution data for Carbon, Sulfur and Nitrogen in Crude oil

Marijn van Harmelen - PAC AC ANALYTICAL CONTROLS

Knowledge of the amount of sulfur / Nitrogen and its distribution in hydrocarbons is economically important in determining product value and in determining how best to process or refine intermediate products. Sulfur/Nitrogen compounds are known to affect numerous properties of petroleum and petrochemical products. The corrosion of metals and poisoning of catalysts is of concern. In addition, the content of sulfur in various refined products may be subject to governmental regulations. PAC AC ANALYTICAL CONTROLS developed CNS SIMDIS. Adding specific SCD and NCD detectors to a HT SIMDIS provides an analyzer that generates complete hydrocarbon, sulfur and nitrogen boiling point distribution data in less than 30 minutes, without any sample preparation

Abstract# 183 - 10/16/2018 09:00 AM - 9:20 AM - Iris Room

Limit of detection for Sulfur in Aromatic matrices

Robbert Van Wessel - PAC LP

This seminar focuses on how to calculate limits of detection when analyzing trace amounts of total sulfur concentrations in aromatic matrices with a total sulfur UV-fluorescence combustion analyzer. The limit of detection of an instrument is specified by the ability to differentiate an unknown sample from a blank or basic state with a certain probability. To determine the minimum detectable value of an unknown, the precision of the limit of detection increases by not only using the linearity of the calibration but also the residual standard deviation over the whole range of the calibration. Furthermore, by increasing the number of replicates and levels, the certainty is increased which will result a more confident number of limits of detection.

Abstract# 184 - 10/17/2018 11:20 AM - 11:45 AM - Orchid Room

Combination of Split/Splitless Inlet and Back-Flushing Valve Configuration in Online Gas Chromatography Analysis

Binghe Gu - The Dow Chemical Company, Suzanne Lehr -

The Dow Chemical Company, Joyce Zhang - The Dow

Chemical Company, Eric Schmidt - The Dow Chemical

Company, Bill Winniford - The Dow Chemical Company, Balamurali Sreedhar - The Dow Chemical Company
Online GC analysis has advantages of providing immediate feedback on processes, avoiding the need to grab samples that are gaseous or hazardous. Compared with the traditional platform where a fixed sample loop and isothermal oven design are used, the Agilent online GC has advantages of split injection and temperature ramping capability. We report here that a combination of split injection and a back-flushing valve configuration had issues of nonlinear response vs split ratio or the GC not reaching the "ready" status under a high split ratio set. The reasons contributing to these observations and measures to mitigate these issues will be presented.

Abstract# 185 - 10/16/2018 01:00 PM - 1:25 PM - Exhibit Hall A4 Room

Process Raman Gas Analysis in Refining-Update
Susan Harris - Endress+Hauser
On-line process measurement of the composition of gas streams in refining, fertilizer, and other manufacturing industries is essential for the optimal operation of different process units within these facilities. Process analyzers based on gas chromatography, mass spectrometry, and electrochemical technologies are commonly used in these facilities. However, process conditions for certain streams present major challenges for these traditional technologies. Techniques based on optical spectroscopy, including near-infrared (NIR), infrared (dispersive and Fourier transform), and Raman spectroscopy, can provide analysis solutions for these challenging stream conditions. Raman spectroscopy is particularly useful for streams containing homonuclear diatomic gases, such as H₂ and N₂. Hydrogen is an essential feedstock for the hydrotreating, hydrocracking, and catalytic reforming of various hydrocarbon fractions in refineries. A case study will be presented for optimization with the analysis of hydrogen, hydrogen sulfide and other compounds in the hydrogen recycle process in a refinery hydrotreater/hydrocracker and for hydrogen purity measurements in a hydrogen plant.

Abstract# 186 - 10/16/2018 10:00 AM - 10:30 AM - Wisteria Room

Combatting Corrosion in Refineries: Using Ion Exclusion Chromatography to measure Free Cyanide in Sour Water
Jay Sheffer - Metrohm USA
Corrosion is always a chief concern for petrochemical refineries. One of the key steps for processing sour crude oil or gases is desulfurization. Amine treaters are commonly used for this purpose. In amine treaters, acidic gases such as SO₂, SO₃, CO₂, NO, and NO₂ form Heat Stable Salts (HSS). However, since high amounts of carbon and nitrogen are available, cyanide salts may also be formed in the process. Not only is cyanide toxic, but it is particularly corrosive to refinery equipment. Therefore, refineries wish to monitor cyanide concentration as hydrogen cyanide (HCN) in their processes on a regular basis. This paper presents a method by which free and available cyanide concentration is measured using ion-exchange chromatography down to 5 parts-per-million without pretreatment and without interference in a sample matrix containing up to 3% H₂S.

Abstract# 187 - 10/17/2018 10:00 AM - 10:30 AM - Wisteria Room

Burning through the Confusion: See How Combustion IC Provides Superior Halide Analysis
Jay Sheffer - Metrohm USA
There are many options available for measuring halide content in various hydrocarbons and their distillates. Many new analytical techniques claim to provide accurate

measurements but can have significant limitations once experimental interferences are considered. Combustion Ion Chromatography (CIC) has emerged as the clear leader for these measurements based on selectivity, reliability, and sensitivity. In this paper, we will investigate inter-laboratory study data used to validate new Combustion IC methods. Using these case studies, we will contrast the testing needs of industry and compare available analytical techniques.

Abstract# 188 - 10/16/2018 10:30 AM - 11:00 AM - Wisteria Room

Simple, Efficient Petrochemical Analysis with NIR and Raman Spectroscopy
Adam Hopkins - Metrohm USA, Raghvendra Sengar - Metrohm USA
Traditional ASTM protocols for testing petrochemical products are often time-consuming processes, require highly skilled labor, or have high consumables costs. These drawbacks reduce the efficiency and profitability of plant operations, despite the existence of well-proven alternative technologies such as near infrared (NIR) and Raman spectroscopy that are well-described in ASTM E-1655. This talk explores the basics of implementing efficient spectroscopic methods in the context of the ASTM standard practice, citing the benefits for specific examples such as lubricant oil testing, ethanol blending, diene value, and amine strength.

Abstract# 189 - 10/16/2018 10:00 AM - 11:00 AM - Orchid Room

FTIR /Raman Theory and Sample Handling
Cam MacIsaac - Thermo Fisher Scientific
This workshop will cover the theory behind several spectroscopic techniques including Fourier transform Infrared technique. It will review what happens to molecules when they are exposed to the infrared. It will cover an overview of how spectra are recorded using the FT technique. It will also cover the theory behind several common IR sampling techniques and explore their usages.

Abstract# 190 - 10/16/2018 01:30 PM - 2:00 PM - Wisteria Room

Fast Hydroxyl Number Analysis
Kerri-Ann Blake - Metrohm USA
Fast is not a term used to describe hydroxyl number analysis. Correct reagent dosing and adherence to reaction times are critical to achieving accurate results. Traditional titration systems are limited by the ability to react and titrate single samples. Getting results up to 60% faster is now a possibility with the latest robotic titration technology. Join us and learn how to speed up hydroxyl number analysis times and how near infrared spectroscopy can be used as a complimentary approach to achieve this analysis in a matter of seconds.

Abstract# 191 - 10/16/2018 02:00 PM - 2:30 PM - Wisteria Room

Moisture Analysis of Solids, Liquids and Gases
Kerri-Ann Blake - Metrohm USA, Lori Spafford - Metrohm USA
Moisture can also increase corrosion and lead to catastrophic failure. There are several techniques for determining moisture or water content. Karl Fischer (KF) analysis is the only technique chemically specific for water and can be performed on solids, liquids, and gases. Complimentary to KF, near infrared spectroscopy (NIR) reduces analysis time and eliminates the need for additional chemicals. This technique can be applied at the benchtop or as an online analyzer. This talk will discuss the analysis of different sample types by Karl Fischer titration and how this

data can be funneled into NIR for faster, reagent free analysis.

Abstract# 192 - 10/16/2018 09:00 AM - 9:50 AM - Orchid Room

Microspectroscopic Sampling – FT-IR and Raman Microscopy
Steve McQueen Thermo Fisher Scientific

This workshop will highlight the advantages of using Infrared and Raman microscopy techniques in the analysis of micro-scale materials. The presentation will illustrate various applications of both microscopy techniques and the advantages of each based on the type of materials being analyzed.

Abstract# 193 - 10/17/2018 01:30 PM - 2:00 PM - Wisteria Room

Better Surfactant Analysis and a New Approach for Cloud Point

KerriAnn Bake- Metrohm USA, Lori SpaffordMetrohm USA

Surfactants are arguably one of the most important and often complex materials used in the petroleum industry. Choosing the correct solubilizer and titrant for a particular surfactant is just the beginning. Titration rates, pH buffering, electrode selection and care all play a role in achieving accurate results. This talk will detail how to analyze different classes of surfactants and provide information on how to improve surfactant titrations for accurate and consistent results. In addition, a new approach to cloud point determination using an optical sensor will also be presented.

Abstract# 194 - 10/17/2018 02:00 PM - 2:30 PM - Wisteria Room

Robotic Titration for Consolidating Petrochemical Titrations

KerriAnnBlake- Metrohm USA, Lori SpaffordMetrohm USA

In busy petrochemical operations, various titrations are scattered throughout the laboratory. Streamlining workflow is difficult because there are multiple users, different software interfaces, and very different applications. Consolidating this work into a single, automated and intelligent system solves these challenges. The OMNIS titration system allows you to consolidate Karl Fischer, TAN, TBN, Hydroxyl Number, Mercaptan, Surfactant analysis and so much more into a single platform that can perform up to four different applications simultaneously. Attend this talk to learn how this highly modular instrument is the only one of its kind and increases sample throughput while decreasing overall analysis time.

Abstract# 195 - 10/16/2018 01:00 PM - 2:00 PM - Orchid Room

FT-IR Spectral Interpretation and Problem Solving

Dr. Robert Jones Thermo Fisher Scientific

This talk will give an overview of FT-IR interpretation by focusing on several common functional groups. It will cover major hydrocarbons including aliphatic, olefinic and aromatic groups. Additionally, it will discuss carbonyl groups like esters, ketones and carboxylic acids. It is designed to give an understanding of commonly seen infrared bands and to help better understand infrared data.

Abstract# 196 - 10/17/2018 10:00 AM - South Lobby

OMNIS: Titration for Faster, Safer and Easier Analysis

KerriAnn Blake Metrohm USA

Tight deadlines, high sample throughput, strict safety and quality standards – this is life in the analytical laboratory. This poster introduces the OMNIS titration platform that makes titration safer, faster and easier. We demonstrate the automation of four simultaneous analyses to increase

sample throughput by 60% compared to existing methods. For safety, we describe a contact-free reagent exchange system that makes reagent exchange safer. Lastly, we show the safety and productivity benefits of this truly modular titration platform. Designed to grow with the needs of your laboratory, we present the OMNIS platform in expandable configurations that adjust to your laboratory demands.

Abstract# 197 - 10/17/2018 01:30 PM - South Lobby

Acid Number of Crude Oils and Petroleum Products by Catalytic Thermometric Titration using ASTM D8045

KerriAnn Blake- Metrohm USA, Lori SpaffordMetrohm USA

ASTM Standard D8045 describes the analysis of acidity in difficult crude oils and petroleum products using thermometric titration. This new technique overcomes solubility and precision challenges encountered with traditional potentiometric measurements. Thermometric titration is more precise, faster and reduces solvent requirements. Through eight years of development work in ASTM and thousands of sample measurements this new standard is shown to be rugged, robust and transportable across many labs and technicians. This poster provides a clear analysis of data acquired with this new method and details the benefits of thermometric titration for safer and more precise acidity analysis.

Abstract# 198 - 10/16/2018 02:10 PM - 3:30 PM - Orchid Room

Omnice Software Tutorial for IR/Raman Spectroscopy

Cam MacIsaac Thermo Fisher Scientific, Dr. Robert Jones Thermo Fisher Scientific

This workshop will cover Omnic software, the popular platform for running Thermo Fisher FT-IR, FT-NIR, and Raman spectrometers. A live software demonstration will be given to highlight features of Omnic, which will include collection of data from a working spectrometer. A live demonstration of TQ software will be given illustrating FTIR, FT-NIR and Raman quantitative and qualitative methods. Suggestions will be given on how to diagnose chemometric methods to ensure they accurately predict. Some pitfalls will be covered to avoid improperly modeled methods. In addition, an overview of Macros/Basic automated workflow software will be given. This software is designed to build pre-program quantitative predictions. The Macros language can also automate many other software functions, like basic kinetic routines.

Abstract# 199 - 10/17/2018 01:00 PM - 1:30 PM - Hibiscus Room

Using Mass Spectrometry as an Ion Chromatography Confirmation Tool For The Determination of Alkylamines and Alkanolamines in Scrubbing Solutions

Carl Fisher Thermo Fisher Scientific, Terri Christison Thermo Fisher Scientific, Jeff Rohrer Thermo Fisher Scientific

Amine scrubbing or neutralizing solutions are used routinely to prevent corrosion during transportation to the refinery or to remove sour gases during the refining. Alkylamines are contaminants originating from the alkanolamines functioning in their neutralizing role. In the complex samples characterized by processing plants during refining, molecular confirmation is often needed for compounds identified chromatographically. Ion chromatography coupled to an electrospray ionization mass spectrometer (IC-ESI-MS) is an ideal and economical way to determine and confirm amines. Here we demonstrate amine contaminant determinations in amine solutions by cation-exchange separation followed by suppressed conductivity and ESI-MS detections in a serial configuration.

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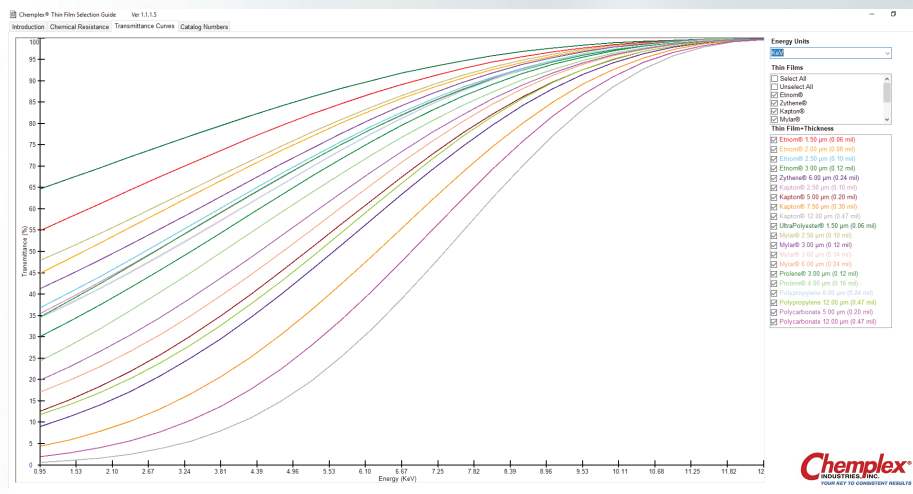
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Abstract# 200 - 10/17/2018 10:00 AM - South Lobby

Determination of Total Fluorine, Chlorine, and Sulfur in Aromatic Hydrocarbons by Oxidative Pyrolytic Combustion Followed by Ion Chromatography (Combustion Ion Chromatography-CIC)

Carl Fisher - Thermo Fisher Scientific, Sachin Patil - Thermo Fisher Scientific, Jeff Rohrer - Thermo Fisher Scientific

The total fluorine, chlorine, and sulfur contained in aromatic hydrocarbon matrices can contribute to emissions that cause pollution, be harmful to many catalytic processes, and lead to corrosion. Ion chromatography (IC) is a sensitive and versatile method for the determination of halides and sulfate. Application of combustion IC (CIC), which combines oxidative pyrolysis with IC, has been demonstrated for many applications that determine the total amounts of these elements in samples. The work presented here describes determination of fluorine, chlorine, and sulfur in aromatic hydrocarbon samples based on ASTM method D7359-14a.

Abstract# 201 - 10/17/2018 10:30 AM - South Lobby
Fast Separation of Heat Stable Salts

Carl Fisher - Thermo Fisher Scientific, Manali Aggrawal - Thermo Fisher Scientific, Jeff Rohrer - Thermo Fisher Scientific

Hydrogen sulfide (H₂S) and carbon dioxide (CO₂) are often found in natural gas streams and are removed using amine-rich solutions before it can be transported/used. During this process, heat stable salts (HSS) can form as a result of an irreversible reaction of the amine with certain acidic components. Because HSS are corrosive, it is important that they be monitored. Here we present an Ion Chromatography (IC) method that uses a high-capacity, hydroxide-selective anion-exchange column with a fast gradient to analyze various refinery samples for the presence of common inorganic anions and heat stable amine salts.

Abstract# 202 - 10/17/2018 02:10 PM - 2:40 PM - Tulip Room

The Correlation Between Tier 3 RVP Analysis, Laboratory Automation, and Quality

Liz Sherburne - LGC Standards

With a continuously diversifying feeder stream for refineries the importance of accurate RVP analysis under EPA Tier 3 and its financial impact are growing fast. The increasing trend of moving toward automation in refineries results in the need for increased quality control checks to monitor the process. The value of the quality control checks is dependent on the accuracy of the analysis. Accuracy of the analysis is dependent on many factors within the process stream. One area that can greatly impact accuracy derives from the quality of the standards used for the calibration of the instrument. This presentation will discuss the aspects of standards that impact quality and the resultant effects on analytical results and their implications.

Abstract# 203 - 10/17/2018 09:00 AM - 11:30 AM - Jasmine Room

Leveraging the Power of Excel in Analysis & Research

Scot Abbott - Prems

MS Excel® is an exceptionally powerful and underutilized resource for scientists and engineers. This short course will show how to use Excel® for instrumentation control, automated experimentation, data post processing, reviving broken instruments and making whole, new analytical systems. This approach provides an economic way to expand the power in labs at very modest cost without need for a dedicated programmer or electrical engineer. It will show how to make user interfaces, revive and control instruments, and assemble separate devices into a working whole analytical system. Examples include chromatography systems, mechanical testers, automation of sample

preparation, robotics and economic robotics for lab applications.

WHO SHOULD ATTEND

Scientists and engineers involved with instrumentation; researchers needing new or novel measurement systems; owners of broken, expensive instrumentation; service engineers; people automating procedures and devices.

TOPICS

1. Software Aspects with Examples for:

- Essentials of Device Personality
- Defining user interfaces
- Defining system control; key tasks
- Intrinsic documentation
- Avoiding writing code

2. Hardware Aspects: Mechatronics in Labs

- Actuators
- Sensors
- Work stations
- Transporters

3. Integrating the Electronic and Software Elements

- Simple examples
- Whole instrument personalities
- Smart controls
- Reviving broken instruments
- Making complete system from components

Abstract# 204 - 10/17/2018 02:30 PM - 2:55 PM - Daffodil Room

Lab Automation Using Excel

Scot Abbott - Phoenix

Most labs have faced a serious problem with pressures of Automation in most labs has been limited to expensive robotics or autosamplers dedicated to particular instruments.

A new and powerful way has been developed which now makes it cost effective and easy to accomplish automation and add programmable sample preparation to any instrument-without the need for a custom programmer or dedicated engineer. The strategy and several examples will be presented and discussed.

Abstract# 205 - 10/17/2018 09:55 AM - 10:40 AM - Orchid Room

TOC Monitoring in Chemical Industries

Gary Boostrom - Landon and Associates Liquid Analysis Experts

Total Organic Carbon (TOC) is a measure of the carbon content of dissolved and undissolved organic matter present in a water sample. TOC measurement has a direct relationship with the content of the products in a process stream, and the organic contamination in a waste water stream leaving a chemical or petrochemical production facility. Measured by the BioTector Two Stage Advanced Oxidation (TSAO) technology, TOC can be used to detect leaks, incidents and contamination in the processes, to protect process equipment, to prevent product losses, and to reduce the energy and waste treatment costs by means of a real time TOC analysis. Learn why TOC measurement is important, benefits of measuring online TOC, and review industry application examples.

Abstract# 206 - 10/17/2018 01:30 PM - South Lobby

Analysis of Oxygenates and Aromatics Using ASTM Method D4815 and D5580

David Scott - PerkinElmer, Lee Marotta - PerkinElmer, Leeman Bennington - PerkinElmer

Gasoline samples are complex and a single column solution is not always readily available for the required analysis. As such solutions that have multiple columns, valves,

backflushing and heartcutting ability have been developed to overcome these challenging separations. The resulting standardized methods can have a complex series of columns and valves that limit the flexibility of a gas chromatograph (GC) to analyze samples for other analytes. Removing and installing column sets is time consuming and causes instrument downtime with subsequent loss of productivity. Flexibility is a key attribute in the decision to purchase capital equipment for the increase in productivity and return on investment. The PerkinElmer Model ARNEL 4004 analyzer utilizes the same column set and valving for ASTM D4815 and ASTM D5580 enabling greater analysis flexibility and subsequent return on investment.

Abstract# 207 - 10/17/2018 02:30 PM - 2:50 PM - Exhibit Hall A4

Simplifying GCxGC – Streamlined Software for Fast Characterization of Petrochemicals
Matthew Edwards - SepSolve Analytical, Laura McGregor - SepSolve Analytical, Nick Bukowski - SepSolve Analytical
Comprehensive two-dimensional gas chromatography (GCxGC) has been proven to be an ideal platform for the analysis of complex mixtures, but the data processing aspect has a reputation as being difficult and time-consuming. GCxGC data exploration, filtering and mining need not be complex, and can be implemented in an environment that is based on classical peak detection algorithms and chromatographic rules. Here we will demonstrate simple yet effective GCxGC data processing for a range of file types, proving that this technique can be a productive contributor to any high-throughput laboratory, by enabling sophisticated peak merging, flexible data navigation and streamlined workflows

Abstract# 208 - 10/17/2018 11:00 PM - South Lobby
Analysis of Total Petroleum Hydrocarbons (TPH) by GCxGC-FID

Matthew Edwards - SepSolve Analytical, Laura McGregor - SepSolve Analytical, Mark Lemons - Markes International, Aaron Parker - SepSolve Analytical
The determination of aliphatic/aromatic compounds when performing Total Petroleum Hydrocarbon (TPH) analysis is typically a lengthy process – with time-consuming sample fractionation and multiple analyses per sample. Here we show how the enhanced separation capacity of GCxGC-FID eliminates the need for offline sample fractionation. Furthermore, a dual-channel configuration can be used to double the sample throughput per instrument - increasing productivity, reducing bench space and lowering installation costs, all while meeting the criteria set out in standard methods (e.g. TPH Criteria Working Group and Massachusetts State).

Abstract# 209 - 10/17/2018 02:45 PM - 3:25 PM - Iris Room

Application of ACOMP (Automatic Continuous Online Monitoring of Polymerizations) for Process and Quality Improvements Based on Real-Time Measurements in Polymerizations
Sigmund Floyd - Fluence Analytics, Michael Drenski - Fluence Analytics
ACOMP (Automatic Continuous Online Monitoring of Polymerizations) is a solution for online monitoring of polymerization including hardware, analysis software and process data recording. Originally developed at Tulane University it was commercialized by Fluence Analytics. Starting in 2013, ACOMP has been industrially applied for 4 years in production of polyacrylamide and in the lab for a wide range of polymers. We will introduce using case

studies typical applications of ACOMP for process monitoring including the polyacrylamide system, condensation polymers and acrylic adhesive formulations. Typical benefits include cycle time optimization, reaction to process upsets, quality improvement and anticipation of process problems caused by gelation. ACOMP can also be used to produce polymers with targeted composition and/or molecular weight distributions. Future generations of ACOMP will enable industrial process control of polymer properties (already demonstrated in the lab) and process learning via artificial intelligence algorithms.

Abstract# 210 - 10/17/2018 10:10 AM - 10:30 AM - Exhibit Hall A4

Polyarc Advancements Reduce the Dependence on Complex Standards for Trace Impurities by GC/FID
W. Christopher Siegler - The Dow Chemical Company, Marla Gilbert - The Dow Chemical Company, James Griffith - The Dow Chemical Company, Bill Winniford - The Dow Chemical Company, Jim Luong - The Dow Chemical Company, Andrew Jones - Activated Research Company
In the chemical industry, the determination of trace impurities in a manufacturing process necessitates the quantification of complex mixtures in various matrices. These analyses present a significant challenge due to the complexity of the analytes (chemical functionalities ranging from oxygenates to chlorinated compounds) and the need for multi-level calibration to account for the varied response of these analytes by GC/FID. Here, we demonstrate the rapid and accurate quantification of a wide variety of compounds for trace impurity analyses using a commercial post-column reaction system from ARC called the Polyarc Ultra. Accurate quantification without complex calibration standards simplifies the workflow in analytical determinations and reduces the potential for errors associated with calibrations and sample handling.

Abstract# 211 - 10/17/2018 02:00 PM - 2:45 PM - Iris Room

Catalyst Regeneration and Performance by STA-QMS in Humid and Corrosive Environments
John Erne - NETZSCH Instruments
This presentation will detail the experimental platform by NETZSCH Instruments for characterization of catalyst performance and regeneration in real-world conditions. This exclusive, turnkey platform includes STA (DSC-TGA) combined with QMS, with full humidity control and corrosive gas introduction. Large sample volumes run in humid atmospheres and with corrosive gases even to high temperatures will showcase the capabilities of this research platform.

Abstract# 212 - 10/16/2018 01:40 PM - 2:10 PM - Jasmine Room

Characterizing Stationary Phases for GC x GC with Representative Probes
Bill Winniford - The Dow Chemical Company, Raymond Jaramillo - Penn State University, Matthew Klee - XO Associates, Frank Dorman - Penn State University
In this study retention indices were measured for a set of 11 probe compounds of differing chemical functionality on a range of open tubular capillary columns: Rxi-1ms, Rxi-5ms, Rxi-35 Sil-ms, Rxi-17 Sil ms, Rtx-200, Rtx-2330, Rtx-Stabilwax. GC x GC applications have most often done with a non-polar (PDMS) phase followed by a polar phase (typically polyethylene glycol wax). The second most common configuration is the reverse of this, polar followed by non-polar. The potential combinations of capillary columns with unique selectivity is well over 100. This is too many for an iterative approach and comparative retention

index data is limited primarily to PDMS phases and wax phases. The results of this study give examples of how much functional groups affect retention changes with column phases. Kovats retention indices are based on the nearest C_n and C_{n+1} n-paraffins to the component of interest and are intended to compensate for column, instrument and laboratory variability. But as stationary phase polarity increases hydrocarbon retention decreases significantly. In GC x GC it is important for components to elute in a relatively narrow capacity factor window on the second dimension column so it is important to also measure absolute retention. The data from this study are useful in estimating the relative retention with new GC x GC column combinations.

Abstract# 213 - 10/17/2018 02:30 PM - South Lobby
Analytical Sample Prep: The Forgotten Part of Method Development

Thomas Valorose - Pall Laboratory

High volume laboratories must keep instruments running while producing quality data. Using Pall Acrodisc syringe filters as part of the sample preparation process makes this possible by preventing column blockages without contributing extractable materials. Pall Acrodisc syringe filters increase HPLC column life 46 times and UHPLC columns over 111 times compared to unfiltered samples. Additionally, Pall Acrodisc syringe filters, with the four most common membrane chemistries, combine high particulate retention with minimal release of extractable materials. This makes them ideal for a variety of chromatography and sample preparation applications, including GC, ICP and specialized MS and ion chromatography techniques

Abstract# 214 - 10/16/2018 09:20 AM - 9:45 AM - Daffodil Room

Measuring Corrosive gasses using Gas Chromatography (GC) techniques in pipeline products

Chris Goss - Innotech Alberta, Lee Marotta - Perkin Elmer, Amanda Prefontaine - Innotech Alberta

Sediment material from corrosion (containing magnetic iron, oxide based) has been found accumulating in pumps, valves, on pigs and in line inspection tools.

Some of the key players in corrosion are oxygen (O₂), carbon dioxide (CO₂) and hydrogen sulfide (H₂S). These can cause corrosion when present in the low ppm to ppb range. A robust, reliable method to detect trace levels of dissolved corrosion gases (O₂, H₂S and CO₂) in pipeline products does not exist. A method was developed that uses a liquid phase injection, a backflush so the fixed gas column does not get contaminated, and a sensitive detector. Low ppm detection limits were achieved.

Abstract# 215 - 10/16/2018 09:30 AM - 10:00 AM - Floral Hall A 1 Room

Tips and Tricks for OpenLab's CDS'

Kathleen O'Dea - Agilent Technologies

Agilent offers three varieties of chromatography data systems: OpenLAB CDS, OpenLAB Chemstation, and OpenLAB EZChrom. Over the past decade, these data systems have evolved to share a variety of common functions: instrument drivers, reporting engines, and administration functions. In this session we'll discuss tips and tricks to expand your understanding and use of system functions that are applicable no matter which OpenLAB data system you use.

Abstract# 216 - 10/16/2018 10:00 AM - 10:30 AM - Floral Hall A 1 Room

ICP-MS and ICP-OES Maintenance, Troubleshooting – Tips and Tricks

Mark Kelinske - Agilent Technologies

In this interactive session, the Agilent ICP-MS and ICP-OES experts will discuss proper instrument maintenance and troubleshooting to keep your instrumentation operating at

peak performance. Come learn tips and tricks from the experts themselves.

Abstract# 217 - 10/16/2018 01:30 PM - 2:00 PM - Floral Hall A 1 Room

Progress Update of Two proposed ASTM methods on Elemental Analysis of Biodiesel and Crude Oil by Microwave Plasma Atomic Emission Spectrometry (MP-AES)

Jenny Nelson - Agilent Technologies

This talk will give details on the progress of the two proposed ASTM MP-AES methods in the D02.03 Committee on Elemental Analysis. The two standards are Elemental Analysis of Biodiesel and Crude Oil/Fuel oil by Microwave Plasma Atomic Emission Spectrometry (MP-AES). The pilot study has been completed and the results will be shared. The full interlaboratory Study (ILS) is in progress, and updates will also be shared. We will present the proposed method which describes the multi-element determination of trace elements by MP-AES in both biodiesel and crude oil/fuel oil.

Abstract# 218 - 10/17/2018 09:30 AM - 10:00 AM - Floral Hall A 1 Room

Determination of Chlorides in Crude Oils by Direct Dilution Using ICP-QQQ-MS

Jenny Nelson - Agilent Technologies

The presence of chlorides in crudes is monitored for the presence of salts before entering into crude oil refining units. The concentration of salts in the crude oil varies between oil fields which the crude is extracted, and it can be present within the range of 3 to 300 pounds per barrel. For ICP-MS, chloride determination could be impacted by the presence of sulfur. The present work will present the results obtained on the determination of chloride in crude by direct dilution using tandem ICP-MS/MS. Comparison between single quadrupole vs. tandem will be addressed a final comparison with other techniques

Abstract# 219 - 10/17/2018 10:45 AM - 11:15 AM - Floral Hall A 1 Room

Out of the Box LIMs Interface

Kathleen O'Dea - Agilent Technologies

Many laboratories have an interest in a CDS to LIMs interface to increase production throughput, simplify running samples, and automate sample introduction to your instrumentation. When this interface is custom code, the cost not only of developing it, but maintaining it through changing LIMS, CDS, and Operating System versions can be very steep. Agilent has developed OpenLab Sample Scheduler, an "out of the box" solution to interface any LIMs system with OpenLab CDS, and OpenLAB EZChrom. The Sample Scheduler connects your LIMS system to CDS with user configurable workflow settings to meet the day to day requirements of your instrument analysis.

Abstract# 220 - 10/17/2018 11:30 AM - 12:00 PM - Floral Hall A 1 Room

GPC Analysis in the Open Lab 2.3 Environment

Sue D'Antonio - Agilent Technologies

This is a look at using open lab 2.3 GPC add on for a simpler, yet powerful tool in measure MW. This is an overview of the use calculations in the HPI environment. While still allowing Analytical quantitative analysis.

Abstract# 221 - 10/16/2018 02:10 PM - 2:30 PM - Jasmine Room

A Comparison of PAH Levels in Used Engine Oils by GC-TOFMS and GCxGC TOF-MS

Christina Kelly - LECO Corporation, Joseph Binkley - LECO Corporation, Lorne Fell - LECO Corporation

Using a variety of techniques including comprehensive two-

dimensional gas chromatography (GCxGC) and better-than-nominal resolution time-of-flight mass spectrometry (TOFMS), PAHs are separated from matrix interferences using selectivity in both orthogonality in column phases and mass accuracy. With common quantitation challenges overcome, relative PAH levels in used engine oils are compared between gasoline-powered engines in cars that routinely travel short and long distances. A direct comparison of the ratios between PAHs and their methylated counterparts provide insight into the nature of combustion by-products that occur when engines are routinely operated under different conditions.

Abstract# 222 - 10/17/2018 02:00 PM - South Lobby
Optimizing GCxGC Parameters for Petroleum Analysis using a Free Web-Based Tool

Christina Kelly - LECO Corporation, Joseph Binkley - LECO Corporation, Lorne Fell - LECO Corporation
Comprehensive two-dimensional gas chromatography (GCxGC) combined with time-of-flight mass spectrometry (TOFMS) is a well-established method for characterization of petroleum samples because of the ability to separate structural classes of hydrocarbons into distinct bands of analytes that can then be identified with library-matched mass spectra. However, transferring traditional one-dimensional gas chromatography methods to optimized two-dimensional methods can be daunting because of the sheer number of options available for setting up commercial GCxGC systems. Using a new online tool, SimplyGCxGC, the process of translating an existing analysis into an optimized GCxGC method is experimentally determined for a sample of diesel fuel.

Abstract# 223 - 10/17/2018 09:25 AM - 9:55 AM - Orchid Room

Learn Easy Techniques and Enhance Productivity with Dean Switching and Backflushing
Lee Marotta - PerkinElmer, Leeman Bennington - PerkinElmer, David Scott - PerkinElmer
Backflushing, Dean switching and column switching have been used in Gas Chromatography (GC) for several decades. These provide several unique advantages including isolating targets of interest from a complicated matrix, making the analysis easier, and allowing flame ionization detection (FID) instead of mass spectrometer (MS) detection. Combined with the ability to backflush, faster chromatography, optimizing sample throughput and productivity are achieved. This paper will discuss an easy to use, inert, micro-fluidic device called the "Swafer", and how it is applied in several petroleum and industrial applications. Robustness testing results, using the Swafer in high temperature simulated distillation solutions, will also be discussed.

Abstract# 224 - 10/16/2018 02:00 PM - 2:45 PM - Floral Hall A 1 Room

Running ASTM Methods on the Agilent Intuvo Gas Chromatograph
James McCurry - Agilent Technologies
Many ASTM gas chromatographic methods are routinely used in refining and chemical production laboratories to assure process control and product quality. With its small footprint, easy-to-use features, and smart diagnostics, the Agilent Intuvo Gas Chromatograph is ideally suited for these types of measurements. This presentation will highlight the performance of several diverse ASTM methods run on the Intuvo GC, with focus on ultra-fast simulated distillation (SimDis), comprehensive aromatic solvent purity, and biodiesel quality.

Abstract# 225 - 10/17/2018 09:20 AM - 9:50 AM - Iris Room

Utilizing a Laboratory Information Management System (LIMS) to meet ISO 17025 Requirements
Jeanne Mensingh - Labtopia
Laboratories striving to meet ISO 17025 requirements tend to be overrun with record keeping and traceability issues. The manual laboratory is paperbound with logbooks, spreadsheets, and worksheets to meet the records management portion of ISO 17025. Many of these record types include data for sample management workflows, analyst certification, result entry and verification, calculations, approvals, reporting, instrument management, stocks/reagents, and data archival. A majority of LIMS systems have functionality to maintain each of these laboratory records electronically in a validated and secure environment. This capability enables the laboratory to meet requirements by associating records to the sample and the analyst. Laboratory quality assurance can rely on fully integrated work processes that ensure compliance with applicable regulations and ease of data retrieval. This presentation will provide examples and workflows of how LIMS helps the laboratory meet ISO 17025 requirements.

Abstract# 226 - 10/17/2018 01:30 PM - 2:30 PM - Daffodil Room

Implementing LEAN Tools in the Laboratory
Jeanne Mensingh - Labtopia
By applying Lean Manufacturing tools to the laboratory the company can reap the benefits of lower costs and labor efficiency. There are several Lean tools that can be applied to the laboratory; Value Stream Mapping, 5S (Sort, Set-up, Shine, Standardize, Sustain), Cell/Standard Work, Pull/Kanban, and Set-up Reductions. This presentation will provide a short overview of each of the tools with examples of application in a laboratory. By reviewing laboratory workflows, organizing and cleaning the areas, and providing the supplies to the analyst to perform the job; the laboratory supervisor can improve the overall cost, resources and space.

Abstract# 227 - 10/17/2018 03:30 PM - South Lobby

Determination of Organochlorinated Components in Petrochemical Streams by XSD-GC (Halogen Specific Detector)
Leeman Bennington - PerkinElmer, Lee Marotta - PerkinElmer
The presence of organochlorinated components in petrochemical processes can form unwanted hydrochloric acid, ammonium chloride, and metallic chlorides resulting in corrosion, loss of catalyst efficiency, product impurities, and other process issues. Management of these components has grown in importance. Xylem's XSD (halogen specific detector) is an exceptional tool to detect these bad actors. It uses no radioactive source, no organic solvents, and is simple to operate. This poster will demonstrate the use of the XSD and a PerkinElmer Clarus 680 GC for the analysis of organochlorinated components down to the sub-ppm range.

Abstract# 228 - 10/17/2018 09:00 AM - 9:25 AM - Orchid Room

Determination of Total Organochlorinated Components in Used Engine Oils by XSD-GC (Halogen Specific Detector)
Leeman Bennington - PerkinElmer, Lee Marotta - PerkinElmer
Testing for fuel and glycol in used engine oil by gas chromatography regularly can predict when equipment maintenance is required preventing unnecessary oil changes or costly engine damage. Also, of concern is the total amount of organochlorinated components. The presence of these compounds can lead to the production of hydrochloric

acid resulting in corrosion of equipment and difficulty in recycling. This presentation will explain a novel approach of measuring total organochlorides utilizing Xylem's XSD (halogen specific detector) and a PerkinElmer Clarus 680 GC requiring no sample preparation, a run time of ~3.5 min, and a way to run in tandem with existing fuel in oil analyses.

Abstract# 229 - 10/17/2018 01:00 PM - 2:30 PM - Orchid Room

Solid-state cooling/supercooling of viscometer baths
Mohammed Ghorabian - PSL-rheotek & Anglia Ruskin University, Javaid Butt - Anglia Ruskin University, Stephen Gosling - PSL-Rheotek, Hassan Shirvani - Anglia Ruskin University, Akhtar Mahmood - PSL-Rheotek
Thermoelectric heat pumps (Peltier cooler/ heaters) are simple differential thermocouples and use the thermoelectric effect for transference of heat with the application of an electric current. The physics and engineering effects of such devices have been studied extensively under the steady current supply and are now being used commercially for moderate sub-zero applications. In these cases, the cooling coefficient of performance and maximum temperature drop depends on the material constants of the thermoelectric materials used through the figure of merit, $\theta = a^2/(RK)^2$, where a = Seebeck coefficient, R = electrical resistivity and k = the thermal conductivity. Briefly, this is because the heat removed due to Peltier cooling, $Q = RTI$, which is proportional to the applied current I , is counteracted by Joule heating proportional to I^2R and the reverse conductive heat flow proportional to k . Since Joules heating is proportional to a higher power of I than the thermoelectric cooling term, there will be a current, I_{max} , which produces the largest difference in temperature ΔT_{max} , since cooling of the differential thermocouple occurs at the junction at the cold end of the thermoelectric elements. Joule heating, however, occurs uniformly throughout the thermoelectric elements. Thus, when current is applied, the cooling at the cold junction occurs before the Joule heat reaches the cold end. In this study for the application of viscosity measurements in uniformly cooled baths a cascade of devices together with a specially designed water block was used to reach low and sub-zero temperatures whilst transient method was proposed to achieve supercooling. Such devices will be demonstrated and further discussions will be held to discuss the performance and the technology in a workshop session.

Abstract# 230 - 10/16/2018 09:00 AM - 9:20 AM - Floral Hall A 2 Room

Multivariate approach to on-line supercritical fluid extraction – supercritical fluid chromatography - mass spectrometry method development
Allison Paige Wicker - The University of Texas at Arlington
On-line supercritical fluid extraction-supercritical fluid chromatography-mass spectrometry (SFE-SFC-MS) provides a platform for analyte extraction, separation, and detection, while limiting sample preparation, sample loss or contamination, and significantly decreasing total analysis time. Limited examples for SFE-SFC-MS in quantitative analysis have been reported. This is likely due to the inherent complexity of the system. Here, we systematically evaluated user-definable variables in the system by response surface methodology to establish a basis for method development in determining analytes of varying polarity and classes across sample matrices of varying retentivity to elevate this platform to a more user-friendly and accessible technology.

Abstract# 231 - 10/16/2018 09:00 AM - 9:30 AM - Floral Hall A 1 Room

How to be Compliant with EPA Requirements for ASTM Method D5769 Total Aromatics in Gasoline
Fred Feyerherm - Agilent Technologies
EPA regulation of reformulated gasoline under the Clean Air Act requires the use of ASTM method D5769 to test for total aromatics, If the fuel is out of compliance, large fines could be assessed against the supplier. This method requires a GCMS for detection and provides measurement of both calibrated and uncalibrated aromatics. This talk will cover issues on how to be compliant with this method for both the USEPA and ASTM.

Abstract# 232 - 10/17/2018 09:00 AM - 9:30 AM - Floral Hall A 1 Room

Ultra Fast EPA 8270E Semivolatiles Analysis using the Agilent 7010B Triple Quad
Fred Feyerherm - Agilent Technologies
EPA Method 8270E now allows the use of GC Triple Quadrupole mass spectrometers for the analysis of semivolatiles organic compounds in environmental matrices. The normal run time for this method is 17 to 24 minutes. Now, a 10-minute ultra-fast analysis time was developed for routine level analysis that will increase efficiency in the laboratory. The fast Semivolatile method uses a DB-5MSUI column, and dynamic multiple reaction monitoring to perform the analysis.

Abstract# 233 - 10/17/2018 10:25 AM - 10:45 AM - Tulip Room

Determination of the Wax Appearance Temperature (WAT) by DSC
Samantha Nania - PerkinElmer
Crude oil is primarily composed of hydrocarbons, some of which are naturally occurring paraffins ($C_nH_{(2n+2)}$). Paraffins that contain ≥ 16 carbons and form crystalline solids at $\sim 20^\circ C$ are known as waxes. Because these high molecular weight waxes can crystallize at low temperatures, they can cause problems at every step in oil production and refining due to solid deposition. The temperature at which this crystallization occurs is called the wax appearance temperature (WAT). Previously, WAT characterized visually as described in ASTM D2500. Here, we show a more precise and scientific way of determining the WAT using differential scanning calorimetry (DSC).

Abstract# 234 - 10/17/2018 02:00 PM - South Lobby

Identification of Oils by Synchronous Fluorescence Spectroscopy
Samantha Nania - PerkinElmer, Steve Upstone - PerkinElmer, Kathryn Lawson-Wood - PerkinElmer
Identifying and characterizing oil is vital for spill remediation. Crude oil and its distillates are fluorescent compounds and therefore can be analyzed using fluorescence spectroscopy. Specifically, a technique called synchronous fluorescence spectroscopy. This method utilizes both monochromators to simultaneously collect excitation and emission spectra at a constant difference to obtain a basic "fingerprint" for mixtures of fluorescent compounds such as these. 2D and 3D synchronous spectra (as constant wavelength synchronous luminescence) are used to show the fingerprint of three different samples, including aviation fuel, fuel oil, and Kuwaiti crude.

Abstract# 235 - 10/16/2018 01:50 PM - 2:35 PM - Iris Room

Gas Phase Spectroscopic Analysis of Volatile Hydrocarbons and Fuels using a New Fourier Transform Infrared (FTIR) Hyphenated Technique
Cory Schomburg - PerkinElmer, Inc.

Fourier Transform Infrared (FTIR) Spectroscopy is a powerful instrumental analysis technique used routinely for characterization, qualitative and quantitative chemical analyses of hydrocarbons. Solids, liquids and semi-solids are commonly tested and in selected applications, gas phase chemical analysis can be performed. Several accessories and hyphenated techniques for FTIR have been described in the literature to improve sample throughput, reduce preparation time and improve the overall sensitivity of the analytical technique. In this presentation a new hyphenated FTIR technique is described combining a Head Space (HS) autosampler with an FTIR containing a heated gas cell to perform gas phase transmission analysis of volatile hydrocarbons.

Abstract# 236 - 10/17/2018 10:00 AM - 10:30 AM - Floral Hall A 1 Room

How to Upgrade your Laboratory with Advanced Intelligence and Smart Connectivity!

Jason Ashe - Agilent Technologies

Agilent's GC Browser Interface is the most extensive interaction with an Agilent GC in which you can be remotely connected and access system intelligence to maximize productivity and monitor instruments without standing right in front of them. It provides a convenient small-footprint means to access many features from the touchscreen, without having to stand at the instrument. Sized with a 10-inch tablet in mind, it can be accessed from any browser on the GC's local network. Like the Touchscreen, the Browser UI has full access to the Diagnostics, Maintenance, Logs, and Help menu items. While some of this content is available on the Touchscreen, the Browser UI allows you to do an extensive review of Logs or read the user manual while enjoying a cup of coffee at your desk, or access instrument status and run diagnostics from any place within reach of your corporate network.

Abstract# 237 - 10/16/2018 09:45 AM - 10:10 AM - Daffodil Room

Olefin Content in Fuels by ASTM D8071

Jean-Francois Borny - McDermott Technology

Removal of ppm sulfur in fuels is regulated by Tier 3 Gasoline mandate from the EPA. Through a process known as hydrodesulfurization, large-scale oil refineries attempt to remove the majority of sulfur from fuels without modifying the composition of the major components, such as olefins and aromatics. Hydrodesulfurization employs catalytic conversion to remove the sulfur while maintaining the other components of interest. It is therefore necessary to have analytical methodology that accurately represents those components. ASTM D1159, bromine number by titration, has been the standard for design engineers to determine the olefin content of the fuel. Detailed Hydrocarbon Analyses (DHA), such as ASTM D6733 and D5134, have improved over time but are problematic when determining the olefin content in order to calculate heat balance and hydrogen consumption for unit design. A 2007 article in Energy & Fuels by Podrebarac and Judzis compared these methodologies and concluded that ASTM D1159 approximated the olefin content better than the other methodologies for large-scale refinery unit design. This presentation will address the reason D1159 works better for design, review original and new data based on D1159, D6733, D5134 and D6839 and explore a newly approved ASTM method, D8071, a Vacuum UltraViolet (VUV) detector. Is ASTM D8071 a solution for olefin content determination?

Abstract# 238 - 10/17/2018 10:30 AM - South Lobby

Determination of Organic Chlorides in Petroleum Products Using a Halogen Specific Detector (XSD)

Cynthia Elmore - OI Analytical

Recently there has been interest in the detection and removal of organic chloride species in petroleum products. Crude oil is distilled to form naphthas and then this goes through catalytic reforming to produce reformates. Reformates are used for many products including gasoline blending stock and aromatic bulk chemicals so the process is crucial.¹ During this process catalysts are conditioned with organic chlorides. If these are not removed they may form Hydrogen chloride and various organic chlorides which can cause operational problems such as corrosion and poisoning of downstream catalysts as well as product specification problems.² Organic chlorides do not occur naturally in crude oils so when present they may be from contamination caused by equipment cleaning or used solvent disposal in dewaxing pipelines.³ Refineries see the need for a more comprehensive approach to the challenges that organic chlorides present in their processes.⁴ The ability to sample at various points in the process and speciate the organic chlorides is important to determine where the contamination is coming from and aids in evaluating processes and chloride removal. This poster will present a simple gas chromatographic method utilizing a halogen specific detector (XSD) to determine chlorinated organic compounds in various petroleum samples.

Abstract# 239 - 10/16/2018 9:40 AM - 10:00 AM - Floral Hall A 2 Room

MALDI-TOF-MS fingerprinting of Friction Reducers

Dino Camdzic - University of Texas at Arlington

As hydraulic fracturing becomes more common, methods to analyze these complex additives are essential. Friction reducers are a type of enhanced oil recovery additive used in the hydraulic fracturing process to reduce friction and backpressure in the pipes while pumping at high flow rates. Matrix-assisted laser desorption/ionization – time-of-flight (MALDI-TOF) mass spectrometry was used to identify the polymer content in six different commercial friction reducers. Each friction reducer was tested at lab-simulated downhole conditions in various matrices including deionized water, produced water inorganic, and produced water with and without the addition of shale core. The goal was to qualitatively determine the polymer content in the friction reducers and their proclivity to degrade to various components at lab-simulated subsurface conditions. The methods developed here using the MALDI-TOF-MS could be implemented as a quick and straightforward approach to detect polymer content in produced water and wastewater for fingerprinting. The methodology is also useful for understanding the stability of these additives under down-hole conditions. Two different polymers containing carbon chains of 12 and 14 with varying degrees of ethoxylation ranging from 6-18 were detected, which was consistent with the MSDS data sheets.

Abstract# 240 - 10/16/2018 10:00 AM - 10:20 AM - Floral Hall A 2 Room

Characterization of Benzene, Toluene, Ethylbenzene, and Xylenes within Friction Reducers using Headspace-Gas Chromatography-Mass Spectrometry-Vacuum Ultraviolet Spectroscopy

Robert Magnuson II - University of Texas at Arlington

A method of fossil fuel extraction that has become more common is known as hydraulic fracturing. This unconventional process allows for the harvesting of oil and gas resources from low porosity shale. This procedure is characterized by pumping a liquid mixture, often with sand suspended in it, underground and fracturing the subterranean rock formations, to release the sequestered fossil fuels. A common component of the hydraulic fracturing method includes the use of friction reducing additives (FR) to aid in the pressurizing of the well and to

minimize flow resistance during the extraction process. FR are complex and variable mixtures, which contain petroleum products. These may include benzene, toluene, ethylbenzene, and xylenes (BTEX), all of which present potential toxicity hazards to the ecosystem if they are present in HF or waste fluids, which are mishandled and spilled. A analysis of 6 FR was conducted using headspace-gas chromatography combined with split detection, to a triple quadrupole mass spectrometer and a vacuum ultraviolet spectroscopic detector (VUV). VUV was selected because it is complementary to the MS/MS in that it allows for the deconvolution of co-eluting xylene isomers and characterization of the various compound classes contained therein.

Abstract# 241 - 10/16/2018 10:20 AM - 10:40 AM - Floral Hall A 2

Differentiation of Phthalate Esters through Gas Chromatography- Vacuum Ultraviolet Spectroscopy with Isomeric Resolution
Michelle Reyes - University of Texas at Arlington
Phthalate esters are used heavily to soften and increase the flexibility of plastics in consumer and personal care products. They have been produced commercially in great quantities since World War II, and can be easily found in food, water, and air due to excess use and bleaching of plastics. Phthalate esters are known to be toxic, teratogenic, mutagenic and carcinogenic towards humans and animals. The length of the alkyl side-chains (from C1 to C13) as well as their isomeric structures (e.g. butyl phthalates) can lead to significant differences in toxicity. Distinguishing which phthalate esters are present in environmental samples is important for quantifying their potential toxicity. In this study, we investigate how gas chromatography-vacuum ultraviolet spectroscopy (GC-VUV) can distinguish phthalate esters that are common in environment and have similar structures. GC-VUV is able to distinguish between compounds which have shown co-elution in GC or isomeric species. Here, we report GC-VUV experiments on a wide range of phthalate standards with different alkyl chain substitution, including isomeric n-butyl, n-hexyl, and n-octyl phthalates. The results quantify the potential of GC-VUV for differentiating toxic phthalate esters in the environment.

Abstract# 242 - 10/16/2018 01:30 PM - 2:00 PM - Floral Hall A 2 Room

Improved ICP Performance with Precise Temperature Control for Petrochemical Applications
Justin Masone - Glass Expansion Inc
The analysis of organic solvents by ICP-OES and ICP-MS is often seen as challenging and problematic due to their volatility, as well as their high carbon content. As a result of their increased volatility, organic solvents have a higher transport efficiency, which can destabilize, or even extinguish, the plasma. The high carbon content can lead to carbon build-up (soot) on the interface cones of an ICP-MS, blocking the orifice and leading to signal drift; in addition, the carbon content can lead to a drastic increase in carbon-based spectral interferences (e.g. 40Ar12C+ on 52Cr+). This is especially true for highly volatile solvents such as naphtha, a mixture of petroleum distillates of wide industrial importance. Historically, naphtha would be diluted with a less-volatile solvent, such as kerosene, which not only presents an unnecessary opportunity for error and contamination to be introduced, but also prevents lower levels of detection from being reached. Utilization of the IsoMist XR, a temperature-controlled spray chamber, eliminates the need for dilution, and it allows for direct analysis of naphtha (as well as other organics) at a temperature of -25 °C, resulting in the highest intensities, best precision, and best accuracy available.

Abstract# 243 - 10/16/2018 02:30 PM - 3:00 PM - Floral Hall A 2 Room

The Next Industry Standard in Mass Spectrometry Hardware
Jeff Werner - Shimadzu Scientific Instruments, Inc.
As the need for user-friendly, robust, and easy to maintain systems increases, manufacturers are racing to meet this demand. Shimadzu is introducing the latest innovations in gas chromatography mass spectrometry hardware. This new instrument and software package combine to make your analysis easier and faster than ever. With tools designed to make even maintenance a breeze, this presentation will explain the how the smartest GCMS can help you reach your ever-increasing analysis goals.

Abstract# 244 - 10/16/2018 03:00 PM - 3:30 PM - Floral Hall A 2 Room

Total Organic Carbon Analysis: Factors That Influence Analytical Results
Ricky Frnka - Shimadzu Scientific Instruments, Inc.
Performing organic carbon analysis on wastewater and process streams is vitally important to the petrochemical industry. Properly maintaining and troubleshooting instrumentation is imperative to providing reliable analytical results. Several factors play a key role in the proper operation of a Total Organic Carbon (TOC) system. These factors, causes, resolutions and available options will be discussed.

Abstract# 245 - 10/16/2018 04:00 PM - 4:30 PM - Floral Hall A 2 Room

Analysis of the ARC Jetanizer for CO₂ and CO In-jet Methanization on Shimadzu Gas Chromatographs
Allison Mason - Shimadzu Scientific Instruments, Inc.
Carbon monoxide and carbon dioxide are common targets for a broad range of applications from greenhouse gas monitoring to refinery gas emissions. Low sensitivity of CO₂ and CO through using Thermal Conductivity Detection (TCD) methods and the lack of detection from Flame Ionization Detection (FID) makes detection sensitivity a challenge. Methanization is a method using a nickel catalyst to convert CO and CO₂ into methane which can be detected using FID, a detector known to exhibit high levels of sensitivity and a broad range of linearity. Traditionally, methanization must be performed using a separate unit added prior to the FID for operation which can be costly, provides limited linearity, and is susceptible to degradation from sulfur containing compounds and oxygen. Activated Research Company (ARC) has developed an in-jet methanizer (jetanizer) which can be installed with no modification or permanent alteration to the instrument setup. The jetanizer provides low level detection of CO and CO₂ with a wide linear range with less susceptibility to catalysis poisoning by high oxygen samples. The goal of this analysis is to analyze the efficacy, durability, and reproducibility of ARC's Jetanizer on Shimadzu Gas Chromatographs.

Abstract# 247 - 10/16/2018 02:00 PM - 2:30 PM - Floral Hall A 2 Room

Elemental Analysis: Choosing the Right Technique
Jon Peters - Shimadzu Scientific Instruments, Inc.
Elemental analysis in the petrochemical industry is important for a variety of applications, particularly in quality control and research and development. Multiple technologies can provide similar analytical solutions but choosing the best fit for particular analytical requirements depends on a host of parameters—including required detection limits, matrix effects, laboratory capabilities, and budget. A presentation of different options will be beneficial to lab managers and others involved in equipping organizations for maximum profitability and analytical flexibility.

Abstract# 248 - 10/16/2018 02:15 PM - 2:35 PM - Exhibit Hall A4 Room

Challenges of Non-aqueous Automated Titrations in the Chemical Industry

Ana Nunez - Dow Chemical

Titration techniques are widely used in the Chemical Industry for product and raw material characterization and qualification. Many of these titrations require a non-aqueous environment, leading to difficulties due to reduced response in a low conductivity media. Advancements in the field of automated titrators and sensor design have created opportunities for analysis at very low levels, in difficult matrices. Several methodologies and current challenges of non-aqueous titrations will be discussed, including matrix and solvent effects, electrode response, electrode conditioning and maintenance, low level detection, as well as the motivation to overcome these challenges to improve on elucidation of product quality.

Abstract# 249 - 10/17/2018 06:00 PM - 8:00 PM - Colonel Paddlewheel

****Baytek User Group 35 Year Anniversary Celebration****

Jonathan Richter - Baytek International

Baytek International is excited to celebrate 35 Years as an industry leading vendor of quality management software for refining, petrochemical, and manufacturing industries. Our refining industry leading products: BLISS LIMS, QC/PLUS SQC, and iPRO Instrument Interface continue to provide the best quality management and automation solutions. Please join us to celebrate the past, present, and future of innovation on the Colonel Paddlewheel boat for a sunset cruise and dinner.

Get your tickets at the Baytek booth #215. The Colonel is open at the Moody Garden's dock for drinks and appetizers at 5 PM and will leave the dock for a sunset cruise at 6 PM.

Abstract# 250 - 10/17/2018 09:50 AM - 10:50 AM - Iris Room

Applying Risk-Based Thinking to Laboratory Operations

Gretchen McAuliffe - Labtopia

There is a shift in the focus of ISO-based standards to a proactive, preventive approach to quality management rather than reactive, incident-based response. This extends to laboratory operations as well, particularly with the latest revision of ISO 9001:2015 and the ISO 17025:2015 standards. One of the fundamental continual improvement tools used to implement such a cultural change is risk management. When companies perform risk analysis, they can effectively identify areas of weakness within operations and the likelihood that the harm would occur prior to an actual event. Once analyzed, labs can implement control measures to mitigate the impact of harm. Additionally, risk analysis allows managers to focus valuable resources on improvements for the most vulnerable processes and methods. This seminar will discuss how management professionals can apply risk-based thinking to all laboratory operations to improve quality and reduce laboratory errors. In addition, application of a common risk analysis tool will be presented.

Abstract# 251 - 10/17/2018 10:30 AM - 11:00 AM - Wisteria Room

Simple, Efficient Petrochemical Analysis with NIR and Raman Spectroscopy

Adam Hopkins - Metrohm USA, Raghvendra Sengar - Metrohm USA

Traditional ASTM protocols for testing petrochemical products are often time-consuming processes, require highly skilled labor, or have high consumables costs. These

drawbacks reduce the efficiency and profitability of plant operations, despite the existence of well-proven alternative technologies such as near infrared (NIR) and Raman spectroscopy that are well-described in ASTM E-1655. This talk explores the basics of implementing efficient spectroscopic methods in the context of the ASTM standard practice, citing the benefits for specific examples such as lubricant oil testing, ethanol blending, diene value, and amine strength.

Abstract# 252 - 10/16/2018 01:00 PM - 1:30 PM - Floral Hall A 2 Room

Improved ICP Performance of High-Solids Samples: Increase Precision and Decrease Downtime

Justin Masone - Glass Expansion, Inc

A sample matrix high in total dissolved solids (TDS) can be a considerable challenge in ICP emission spectroscopy. Since many "real world" samples commonly contain high TDS, it can often be a struggle to optimize ICP analyses for both sensitivity and robustness. Typical problems encountered when analyzing high TDS samples include: interrupted runs and increased downtime, signal drift and suppression, clogged nebulizers, significantly-shortened torch life (devitrification), and physical interference and transport effects. General solutions often include matrix-matching, which can be a difficult problem in itself, dilution, and using dedicated radial-view systems (both of which lead to loss of sensitivity). Alternatively, these problems can be overcome with relative ease by selecting the proper sample introduction configuration; long-term stability when analyzing brines, acid digests, soils, sludges, wastewater, and fusions can be achieved by with the right selection of high-TDS glassware and accessories, resulting in increased sensitivity and precision, as well as decreased maintenance and downtime.

Abstract# 254 - 10/16/2018 09:20 AM - 9:40 AM - Floral Hall A 2 Room

Comprehensive Environmental Testing of Groundwater Quality in the Alpine High Region

Hailee Anderson - The University of Texas at Arlington

Concerns persist around the potential environmental impact of unconventional oil and gas extraction processes. Yet, some industry operators have taken steps to enable third-party monitoring of water quality in and around their operations. In this study, a myriad of custom analytical approaches were used to study the groundwater quality in the Alpine High region of West Texas, an area of increasing oil and gas development. Several batches of samples were collected over time from the Balmorhea State Park and surrounding areas to create a baseline for monitoring the potential occurrence of contamination, from chemicals, such as hydrocarbons and other organics, to abnormal minerals and bacteria. The groundwater samples were analyzed by gas chromatography - mass spectrometry (GC-MS) and headspace - gas chromatography - flame ionization detection (HS-GC-FID), as well as by total organic carbon (TOC) and total nitrogen (TN) analysis. Metals, anions, and the presence of bacterial communities were also assessed by other appropriate analytical methods. TOC and TN provided bulk water quality information; this data can help understand whether abnormalities might be attributed to industrial or agricultural processes. GC-MS is a sensitive technique that was used to identify volatile and semi-volatile compounds present in the sample, while HS-GC-FID was better for assessing highly volatile constituents, such as alcohols. The data collected from the groundwater samples was compared to that of analytical grade (Millipore) water. As of now, monitoring continues, but no significant abnormalities have been detected in samples collected in the Alpine High region.

Abstract# 255 - 10/17/2018 09:00 AM - 12:00 PM - Floral Hall A 2 Room

Restek/Shimadzu Petrochem GC Applications Workshop
Jeff Werner - Shimadzu, Jan Pijpelink - Restek
Welcome to the RESTEK/SHIMADZU Petrochem GC Applications workshop. Because of the need for more accuracy in refinery environments, customers are asking for a closer look at existing analytical techniques. The industry is looking for different approaches to monitor their refining processes. ASTM, as the leading standardization body for this industry is making changes to existing methods to meet the industry's needs. We will also be covering several new and modified GC configurations for analysis, including the new Nexis GC-2030 from Shimadzu. Please, join us for what is sure to be an informative discussion. This workshop will provide an overview of various Petroleum Applications using Gas Chromatography. Covered topics include System and Custom GCs as well as Petroleum Applications Trends and ASTM Developments.

Abstract# 256 - 10/17/2018 10:00 AM - South Lobby

Applicability of micro packed columns (1/16"x 1 mm id) packed with DiatoSorb solid support and configured for use in a dedicated capillary Agilent 6890 and 7890 GC.
Barry Burger - Restek Corp.

Columns and packings made with DiatoSorb solid support are superior in performance and reproducibility because Restek is the only global supplier that completely controls the physical and chemical properties of chromatographic-grade diatomaceous earth. This poster will demonstrate the performance, inertness, and speed of analysis obtained using Sulfinert-coated stainless steel micro packed columns (1/16 inch OD x 1 mm ID) compared to traditional packed columns (1/8 inch OD x 2 mm ID). The micro packed columns are easily installed and configured for on-column injection in a dedicated capillary Agilent 6890 or 7890 capillary GC as well as in a standard packed column GC.

Abstract# 257 - 10/16/2018 03:30 PM - 4:00 PM - Floral Hall A 2 Room

ASTM D7798 Fast SimDis Analysis using Shimadzu Nexis GC-2030 and the Valco Fast Temperature Program module
Ryo Takechi - Shimadzu Scientific Instruments, Inc.
A new ASTM SimDis method - ASTM D7798 has been released. This method is similar to ASTM D2887 except it applies to ultra-fast gas chromatograph technology, which drastically shortens the analysis time. While the Shimadzu Nexis GC-2030 has an industrial-standard GC platform which works for ASTM D2887, with the integration of a Valco Fast Temperature Programmer (FTP), applied to injector, column, and transfer lines, ASTM D7798 can now be run on the Nexis GC-2030. Thus, now the customer can run both the ultra-fast and conventional/typical GC analysis on one GC. In this presentation, we will present the performance data to show the capability of this GC platform running ultra-fast chromatography.

Abstract# 258 - 10/17/2018 02:00 PM - South Lobby

Solutions for analysis of FAME Biodiesel quality using gas chromatography
Katarina Oden - Restek, Barry Burger - Restek
Fatty Acids Methyl Ester (FAME) biodiesel is currently the most popular alternative fuel on the market. Biofuel burns cleaner and emits fewer greenhouse gases than traditional sources of energy. Therefore, it also makes for an environmentally friendlier option. FAME biodiesel is made from animal or vegetable fats with transesterification using acidic or basic catalyst and alcohol. All the steps of the reactions are strictly monitored and the final product is evaluated for reaction yields, residual starting materials, and byproducts. Presented will be solutions for

determination of the final FAME content, residual alcohols, and glycerol/glycerides using gas chromatography.

Abstract# 259 - 10/16/2018 10:15 AM - 10:45 AM - Tulip Room

Techniques to speed up the analysis in gas chromatography
Katarina Oden - Restek, Christopher Rattray - Restek, Jaap de Zeeuw - Restek, Keith Irwin - Restek

In this seminar, we will discuss options to reduce the analysis time in gas chromatography without major investment in equipment nor investment in time to redevelop existing methods. Ways to speed up the analysis depends on the resolution between the components of interest. Whenever there is plenty of resolution between the compounds the analysis time can be decreased by simply shortening the column or increasing the flow rate. However, in cases where we do not have extra column efficiency, the options are to switch to a more efficient carrier gas or use shorter, narrow bore, thinner film columns. Regardless of the choice, to maintain the elution order between the compounds or preserve resolutions, the methods have to be properly translated. Practical examples will demonstrate: Using Restek's EZGC method translator to speed up the analysis while scaling down to smaller, high-efficiency, narrow-bore columns. Presented will be a migration of ASTM D2887 simulated distillation from a slower procedure A to faster procedure B using a slow, 120V oven and the GC Accelerator kit. The GC Accelerator kit provides a simple way to speed up sample analysis. By reducing oven volume, these inserts allow faster ramp rates to be attained. Speeding up a DHA run by increasing the flow on a long, narrow bore column.

Abstract# 260 - 10/17/2018 03:30 PM - 5:30 PM - Floral Hall A 1 Room

ASTM D02.D Committee Meeting: Committee on Hydrocarbons for Chemical and Special Uses
George Gonzalez - ASTM

ASTM D02.D will meet to discuss ongoing committee business. The scope of this committee is for C2, C3, C4, and C5 hydrocarbons. This committee is developing standards to address new technology. This is an official meeting and shall be conducted in accordance with ASTM rules and regulations.

This subcommittee agreed to conduct these meetings during Gulf Coast Conference to allow visitors an opportunity to participate. Visitors are invited to attend and contribute.

Abstract# 261 - 10/16/2018 11:00 AM - 11:40 AM - Exhibit Hall A4 Room

KEYNOTE SPEAKER "Tapping the Vast Resources of New Chromatographic Realms"

Dr. Christopher Reddy - Woods Hole Oceanographic Institution

From seeps to spills Christopher Reddy is no stranger to oil rigs or the ocean. His work has been documented in Science, Analytical Chemistry, Energy and Fuels, The New York Times, NPR and CNN to name a few. This keynote will focus on leveraging the recent advances in chromatography to explore oil regardless of its source or status. Comprehensive multi-dimensional gas chromatography and FTICR mass spectrometry have been key tools in Chris's arsenal to open new realms of investigation into historical and news worthy oil samples. His talk will include data from the first ever high-resolution analysis of oil from the USS Arizona at the Pearl Harbor Memorial in Hawaii. These analyses will serve as a platform to highlight the power of these multidimensional techniques when compared to standard single dimensional GC-MS for upstream and downstream application for petroleum analysis.

Abstract# 262 - 10/16/2018 01:45 PM - 2:15 PM - Exhibit Hall A4 Room

Octane Engine Testing Made Easier- The Latest in XCP Technology for Octane Measurement, Documentation and Automation

Joseph Lange - CFR Engines Inc.

The latest generation of CFR octane rating units from CFR Engines combines the easy-to-use features of a digital control panel with the continued robust engine design that users expect from the CFR products. The CFR F1/F2 Combination Octane Rating Unit with XCP Digital Control Panel conforms to the requirements of ASTM D2699 (RON), D2700 (MON), IP 236 and IP 237. The digital enhancements make the fuel rating process more efficient and accurate with the XCP Digital Octane Panel's automated functions and enhanced documentation capabilities. The XCP Digital Octane Panel is intuitive and user-friendly, and operators require less training to achieve proficiency. With the XCP panel, the CFR Octane engine consistent and reliable test results, accurate data recording, comprehensive report generation, and improved productivity for operators of any skill level.

XCP Features the following:

- Intuitive touch-screen panel interface making easier operation
- Built-in prompts guide the operator through the test procedures for all of the ASTM methods
- User-friendly interface produces consistent and reliable test results from operator to operator
- Critical information for each rating is captured and displayed on screen with bold graphics and easy-to-read charts
- Automated calculations and data logging for enhanced traceability
- Digital knock meter displays actual knock intensity value without operator adjustment or visual interpretation of an analog meter
- Non-contact laser sensor accurately measures cylinder height and displays results on-screen, providing more accurate test conditions
- Electronic on-board barometer automatically corrects cylinder height for barometric pressure
- Environmentally friendly RTDs for improved accuracy and management of critical temperature variables
- Electronic maintenance log capturing all aspects of engine service
- On-screen reports, operations and maintenance manuals

Abstract# 263 - 10/16/2018 10:10 AM - 10:40 AM - Iris Room

HDXRF vs. ICP for Nickel and Vanadium in Crude Oil – A Faster Alternative to ICP

Leslie Johnson - XOS

With the additional nickel and vanadium testing required for light sweet crude oil futures contract for January 2019 and beyond, producers and terminals need a quick and easy method for testing. HDXRF is a faster and less rigorous alternative to ICP method D5708B, providing precise results in minutes. In a recent pilot study, HDXRF demonstrated excellent correlation with ICP data, while also exhibiting better precision.

Abstract# 264 - 10/17/2018 01:30 PM - 2:00 PM - Hibiscus Room

Using Combustion Ion Chromatography to Determine Halogens and Sulfur in Aromatic Hydrocarbons

Carl Fisher - Thermo Fisher Scientific

This presentation will detail work being highlighted in the poster "Determination of total fluorine, chlorine, and sulfur in aromatic hydrocarbons by oxidative pyrolytic combustion followed by Ion Chromatography (Combustion Ion Chromatography-CIC)." The total fluorine, chlorine, and sulfur contained in aromatic hydrocarbon matrices can contribute to emissions that cause pollution, be harmful to many catalytic processes, and lead to corrosion. Ion

chromatography (IC) is a sensitive and versatile method for the determination of halides and sulfate. Application of combustion IC (CIC), which combines oxidative pyrolysis with IC, has been demonstrated for many applications that determine the total amounts of these elements in samples. The work presented here describes determination of fluorine, chlorine, and sulfur in aromatic hydrocarbon samples based on ASTM method D7359-14a.

Abstract# 265 - 10/17/2018 02:00 PM - 2:30 PM - Hibiscus Room

Rapid Determination of Heat Stable Salts using Ion Chromatography

Carl Fisher - Thermo Fisher Scientific

This presentation will detail work being highlighted in the poster "Fast Separation of Heat Stable Salts." Hydrogen sulfide (H₂S) and carbon dioxide (CO₂) are often found in natural gas streams and are removed using amine-rich solutions before it can be transported/used. During this process, heat stable salts (HSS) can form as a result of an irreversible reaction of the amine with certain acidic components. Because HSS are corrosive, it is important that they be monitored. Here we present an Ion Chromatography (IC) method that uses a high-capacity, hydroxide-selective anion-exchange column with a fast gradient to analyze various refinery samples for the presence of common inorganic anions and heat stable amine salts.

Abstract# 266 - 10/16/2018 02:20 PM - 2:40 PM - Tulip Room

What Can Be Done: 2, 4, 8 & 16 Meter Column Modules?

Derrick Saul - Falcon Analytical

The original capability for the patented modular ultrafast GC column modules using commercially available resistively heated stainless steel capillary columns was truly an advancement in GC technology. Elimination of the air bath oven made revolutionary speed and precision from 2 meter column modules as just discussed possible. Applications expanded rapidly as the technology developed. Ultimately, demand for more separation drove continued development up to the current capability at 16 meters per module. Several applications will be discussed including petroleum condensate, gasoline speciation and pesticide residue analysis.

Abstract # 267 - 10/16/2018 - 3:05 PM - 3:30 PM - Exhibit Hall A4 Room

Determination of Olefins in Condensates and Upgraded Bitumen by Gas Chromatography (GC) using a Vacuum Ultraviolet (VUV) Detector

Chris Goss - Innotech Alberta

Amanda Prefontaine - Innotech Alberta

Lee Marotta - PerkinElmer

Leeman Bennington - PerkinElmer

The quantitation of olefins in petroleum products is of great industrial interest, especially for those involved in transportation and upgrading of bitumen and heavier crudes by thermal cracking. Olefins and di-olefins produced in small quantities during the thermal upgrading processes have a tendency to undergo polymerization reactions causing instability to the finished products. The purpose of this research project was to identify and quantify olefins using Gas Chromatography (GC) and a Vacuum Ultraviolet (VUV) detector. The focus matrix was condensate but it has been used on upgraded bitumen. The research has resulted in method detection limits (MDLs) of more than 45 olefins and di-olefins including several conjugated olefins at very low part per million (ppm) levels with greater than 90 percent accuracy. Another 20 olefins have been detected in various samples. This presentation will discuss the research, analytical parameters such as precision, detection limits, method dynamic range and accuracy, and the results from sample data.



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5G Technical

Authorized Manufacturer's Representative for: Peak Scientific: Hydrogen, Nitrogen, Zero Air, Dry Air and FTIR Purge Gas Generators designed for laboratory use. Eaton: Point-of-Use and Facility UPS and Power Protection equipment designed specifically for analytical instrumentation support. Powerex: Laboratory Enclosed Scroll Compressor and Vacuum Systems that are oil-less as well as oil-free and operate at as low as 49 dB.

Booth Number: 1226

Abbott Informatics

Abbott Informatics provides leading Laboratory Information Management Systems (LIMS) solutions that have served customers around the world for more than 30 years. The Abbott Informatics' STARLIMS solutions improve the reliability of laboratory sampling processes, support compliance with global regulatory requirements and industry standards, and provide comprehensive reporting, monitoring and analysis capabilities. With 12 development and support centers throughout the world, Abbott Informatics solutions are used in labs across multiple industries and disciplines including clinical, pharmaceutical, forensic, food safety, manufacturing, petrochemical, public health, and life sciences.

Booth Number: 1006

Accelerated Technology Laboratories

Accelerated Technology Laboratories (ATL) has been a leader in Laboratory Information Management Systems (LIMS) for over 24 years. ATL LIMS products are implemented in over 575 laboratories around the world in a variety of industries including petrochemical, energy, environmental, food & beverage, government, public health and manufacturing. ATL is one of the few independent LIMS providers that is ISO 9001 certified and has a steadfast commitment to excellence in product quality, support and training. Both of ATL's market-leading LIMS products, Sample Master® and TITAN®, can be deployed as a premise-based solution or as a Software-as-a-Service (SaaS) solution.

Booth Number: 825

Activated Research Company

Activated Research Company (ARC) was founded in 2014 with a mission is to make chemical analysis easy while improving accuracy, saving time, and reducing overall costs. The Polyarc® System is an add-on device which simplifies GC/FID analysis by providing a uniform carbon response. The Jetanizer™, launched in 2017, is the world's easiest methanizer – designed to analyze CO and CO2 with ease, all within an FID jet. We are excited to continue creating innovative solutions to simplify workflow and improve laboratory operations, including Solvere™, the universal carbon detector for liquid chromatography. Stop by our booth to learn more.

Booth Number: 522

AD Systems

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Booth Number: 507

Agilent Technologies, Inc.

Agilent Technologies is a leading provider of GC, LC, MS and Spectroscopy instruments, technologies, related consumables, support, services, and workflow solutions that enable you to analyze, confirm and quantify substances of interest with confidence while maintaining the most stringent

laboratory practices, from sample preparation to final report. Learn more www.agilent.com.

Booth Number: 503

Alicat Scientific

Alicat Scientific is a manufacturer of precision mass flow and pressure instrumentation for gases and liquids. Our handheld portable flow meters validate flow rates in real time, and our fast-responding mass flow and pressure controllers keep analytical processes rock-solid. We support all our instruments with the industry's only lifetime warranty.

Booth Number: 124

Allometrics, Inc

For over forty years, Allometrics, Inc. has been calibrating, certifying and repairing critical laboratory test equipment across the United States. Our team of Customer Service Representatives provide superior customer service. Our Service Technicians are NSF, CETA and IEST trained and accredited to provide a quality product. As an A2LA accredited company, our objective is to provide our customers with all the necessary tools to succeed in the current competitive market. Allometrics is an approved vendor for Labconco, Sartorius, A&D, Ohaus, Germfree, and many others. We have recently paired up with MicrOptik BV that specializes in particle analysis, microscopy and spectroscopy for quality control Laboratories and in line processing systems.

Booth Number: 502

Alpha Grainger Manufacturing Inc.

Alpha Grainger has a state of the art 90,000 ft precision machining facility in Franklin, MA. We have 19 INDEX/Traub mill turn centers with a wide range of capability for scientific instruments and oil field ALS. More than 100 machining centers in house. ISO 9001:2008 and AS9100D. Full CMM, Laser, Vision, and Video post process measuring systems for QC. No charge for tooling made in-house by wire EDM and precision grind centers. Fully engaged in the scientific instrument and oil field market with OEM accounts.

Booth Number: 924

AlyTech

AlyTech develops and manufactures calibration gas blending and diluting devices. Multi channels systems are designed to handle up to 20 different gases, and/or one liquid phase. The GasMix product line is fully automated with uncertainty calculation delivered with the final gas solutions.

Booth Number: 118

American Laboratory

Sign up for your free subscription today at www.AmericanLaboratory.com For Laboratory managers and researchers utilizing analytical chemistry and its applications, seeking knowledge on new technologies, methods, applications, and products, the American Laboratory® publication platform provides comprehensive technology coverage for laboratory professionals at all stages of their careers. Unlike single-channel publications, American Laboratory® is a multidisciplinary resource that engages scientists through print, digital, mobile, multimedia, and social channels to provide practical information and solutions for cutting-edge results.

Booth Number: 119

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Booth Number: 1113, 1115, 1117, 1119

AMK Glass, Inc.

AMK Glass has manufactured petrochemical and laboratory glassware for over 40 years. Some of the items that we manufacture are D86 Flasks, D86 Probes, D95 Glassware, FIA Glassware, Centrifuge Tubes, D1160 Flasks, Quartz Glassware & Automatic Burets. We also offer a repair & custom glassware service. We are dedicated to producing the highest quality products at the most affordable price.

Booth Number: 125

Analytik Jena

Analytik Jena US, LLC is a leading provider of analytical instrumentation for spectroscopy, optical and elemental analysis. Our portfolio includes analytical technology for the measurement of elements and molecules, with ICP-MS, High Resolution ICP-OES, Continuum Source Atomic Absorption, UV/Vis, TOC/AOX/EOX and Elemental Analyzers. Analytik Jena is part of the Swiss Endress+Hauser Group.

Booth Number: 202

Anton Paar

Our company produces high-quality measuring & analysis instruments for laboratory, research and industrial applications. In the fields of density & concentration measurement we are the established world leader. Our product portfolio also includes viscometers, particle analyzers, AFM, Raman, viscometers, rheometers, polarimeters, refractometers, microwave synthesis, and microwave decomposition. For over 90 years, we have been at the forefront in developing solutions for diverse industries. Our strong emphasis on R&D and global partnerships with external research institutes fuel our innovation. We turn ideas into instruments at the cutting edge of technology.

Booth Number: 1103

Anton Paar Mobile Lab

The Anton Paar Mobile Lab is a rolling show vehicle that has been customized with 200 square feet of exhibit space to create a complete hands-on demonstration and learning environment. Our technical representatives will be on hand to provide expert advice and live demos. What's Inside? State-of-the-Art equipment and technology from density, viscosity, and particle size analysis to rheology, tribology, microwave synthesis, indentation and scratch testing - the exhibits are designed to demonstrate instrument functionality in a clear and concise way.

Booth Number: 1202

Applied Rigaku Technologies, Inc.

Applied Rigaku Technologies, Inc. offers Bench top and On-Line EDXRF spectrometers. Our bench top EDXRF portfolio includes the compact NEX QC Series for ASTM D4294 compliance, the advanced NEX DE Series for Ultra-low Ni and V in Crude Oil, and the NEX CG Indirect Excitation analyzer for Ultra-low Cl in Crude Oil and ULSD according to ASTM - D7220. For your real time process control needs, we offer the NEX XT Sulfur in Oil XRT analyzer and the NEX OL Multi-Element EDXRF analyzer for liquid streams.

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Booth Number: 106

Aqua Solutions, Inc

For nearly 40 years, Aqua solutions, Inc has manufactured solutions and distributed chemicals to customers across the U.S.A We offer ready to use analytical reagents, solutions, standards and chemicals as well as customized solutions and standards. Our offerings include products that conform to APHA,EPA, ASTM, ACS and others. Many products are NIST traceable. As an ISO certified company, Aqua Solutions will ensure each product is manufactured to meet customer requirements.

Booth Number: 604

Arizona Instrument, a unit of AMETEK

AMETEK Arizona Instrument manufactures Computrac® moisture analyzers and Jerome® mercury vapor analyzers. The Computrac® Vapor Pro® XL is a reagent-free Karl Fischer alternative that provides water specific results without the use of hazardous chemicals or complicated test procedures. The Jerome® J505 can detect as little as 0.05 µg/m³ mercury, which meets and exceeds OSHA, NIOSH and ACGIH action levels, as well as EPA and ATSDR standards for industrial and residential remediation.

Booth Number: 1117

ASI Standards

ASI Standards is your trusted source for customized calibration and quality control materials for the Petrochemical Industry. Sulfur in base, crude, and residual oils for ASTM. Sulfur in Gasoline for EPA Tier 3. Ultra-low Sulfur Diesel for EPA. Polysulfides. Sulfur in Diesel for MARPOL. Sulfur and Nitrogen in isooctane, toluene, xylenes in ampules for combustion analysis. Sulfur and Metals in base and residual oil. Complex, randomized multi-element sets for XRF applications like ASTM D6443 and D7751. Organometallic standards, single and multi-element, for wear metals, additives and contaminants analysis. Chlorine and Sulfur in Waste Oil. Lead Standards in Gasoline or Isooctane. TAN, TBN, Bromine Number/Index Titration Standards. Physical Testing Standards. Biodiesel Standards for D6584.

Booth Number: 315

ATOM Instrument, LLC

ATOM Instrument is a subsidiary of Advanced Holdings, whose principle applications are elemental analysis of total sulfur and total nitrogen in liquids, gases and LPG petroleum products, fuels and distillates. Manufacturer of both online and laboratory bench-top analyzers providing exceptional performance characteristics including high sensitivity, superior stability, outstanding linearity with wide dynamic range and unsurpassed nitrogen rejection when measuring sulfur. Products incorporate ATOM patented Excimer UV Fluorescence (EUVF) detection technologies for analyzing total sulfur analysis and related methods development.

Booth Number: 815

Aalytical Instruments, Inc.

Aalytical Instruments is a manufacturer and distributor of leading-edge petroleum analyzers that brings together high caliber instrumentation from top global manufacturers, to meet the growing challenging needs that the industrial world demands. We supply equipment that reliably tests the composition and quality of fuels, biofuels, biodiesel and lubricants and related substances in refineries, pipelines and laboratories worldwide. Our petroleum testing equipment adheres to standard industry test methods with options that meet the needs of your facility. Each of our instruments is backed by our expert and friendly technical service and support teams. Whether you are looking to start a new test

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procedure, improve on your current performance, or simply minimize errors and increase throughput, we have the solutions to bring your facility up to standard.

Booth Number: 910

B/R Instrument Corp

B/R Instrument Corp manufactures lab scale distillation equipment for various applications including ASTM D1160, D2892 and D5236. We specialize in mini and micro spinning band distillation systems. We also manufacture fractional distillation systems for High Purity solvent recycling of GPC solvents such as TCB and HFIP.

Booth Number: 520

Baytek International

cBLISS, Baytek International's industry leading Cloud-Capable LIMS for the Refining, Petrochemical, Chemical, Water, and Pharmaceutical process industries. QC/PLUS provides fit-for-purpose workflow automation and auditability for ASTM D6299 SQC, EPA Tier 3 QA/QC Compliance, and Reporting. Innovative architecture and leading technology shortens implementation time, reduces cost, and provides zero workstation footprint with rugged security. Enterprise Product Spec Management offers secure web interface and integrated automation. iPRO offers Online Analyzer Data Management, and instrument interface for all types of instruments: GC, GC/MS, etc. Ask us about our award-winning customer service.

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Beckman Coulter

The Beckman Coulter Particle Counting and Characterization division provides fully integrated, easy-to-use systems with numerous quality applications—from particle size, distribution and volume counting to particle counters for cleanliness testing. All systems are configurable to meet varied organizational needs and provide quick and easy analysis for lab users. Our LS 13 320 laser diffraction particle size analyzer is versatile with dry and liquid sampling modules and applicable to a wide range of materials and particle size (nm - mm sizes). Our HIAC 8011+ liquid particle counter can be used for a variety of applications. Please stop by our booth to discuss your applications.

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Block Engineering provides analytical instruments and solutions for commercial and government customers. Analyzers focus on Quantum Cascade Lasers QCL technologies to bring you the best available solutions. Block brings you the BTU determination of natural gas in seconds rather than minutes for better and safer operations of Turbine Generators. LaserWarn for Safety measurements of CWA and toxics.

Booth Number: 1214

Brewer Construction Services

Brewer Construction Services, LLC is a general contractor specializing in the design and construction of laboratory and technical facilities. We present an unequaled team of strength and knowledge of construction with a long history of successful laboratory projects. The owner of the company has been involved in this type of construction since 1980. Many of these projects have been for national, international, and Fortune 100 companies that insist on the highest standards of safety, quality and integrity.

Booth Number: 824

Bruker Corporation

Booth Number: 324

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Booth Number: 1021

Camin Cargo Control

Camin Cargo Control has been providing Inspection, Laboratory Testing, and Additive Treatment services to the Petroleum Industry for over 35 years. We operate in over 50 locations servicing key ports in the Gulf, East, and West Coast US Harbors, Eastern Canada, as well as several Caribbean, Central, and South American Harbors. Our vast network of 24/7 laboratories allow us to test a full range of petroleum products ranging from LPG to asphalt and includes Crude Assay distillation and testing capabilities. Our certifications include ISO 9001, ISO 17025, BQ 9000 and EPA certification for RFG.

Booth Number: 121

Cannon Instrument Company

CANNON is a global leader in viscosity, rheology and other physical property testing. Our products meet or exceed ASTM, AASHTO and SAE J300 regulatory standards. CANNON products include manual and automated viscometers, rheometers, oil standards, constant temperature baths and more. We partner with Tanaka and KEM to offer instruments for density, flash point, moisture and distillation point. Services include instrument calibration/ maintenance, lab testing and custom formulation.

Booth Number: 524

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Featured instruments: Thermo FlashSmart Combustion Elemental Analyzer is also available in a wide range of configurations: N/Protein through CHNS/O for both solid and liquid samples. NOW WITH A 15 YEAR WARRANTY ON THE FURNACES AND DETECTOR. Thermo Microstructure including Pycnomatic ATC Densitometer, Pascal Mercury Porosimeter, and Surfer Gas Adsorption Porosimeter Next Instruments Near Infrared Transmission, NutriScan and SeedCount Image Analyzers Centurion Scientific Ltd: Analytical, Research, and Clinical Centrifuges

Booth Number: 120

CEM Corporation

CEM is a science based technology company that pioneered the field of microwave sample preparation in 1985. CEM thrives on innovation and touches many different industries from oil and gas to chemicals and plastics. Our most recent advancement is the new iPrep microwave digestion vessel which can prepare extremely difficult matrices such as bunker oil and PET with ease.

Booth Number: 1110

Chemical Engineering Progress Magazine (CEP)

CEP®, the flagship magazine of AIChE®, covers technical advances in the global chemical process and related industries, business news, and career advice. It provides the field's most trusted analysis of issues in safety, environmental management, fluids and solids handling, reactions and separations, and more. **Publication Bin**

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A leading global provider of Sample Preparation Products. Chemplex® is the manufacturer of over 40 different sizes and styles of sample cups along with thin-film sample supports, including our exclusive SpectroMembrane® thin-film carrier frames with a variety of thin-film material such as Etnom®, Prolene®, Mylar® and more, in a range of thicknesses. Our line of Calibration and Check standards will enable you to routinely maintain consistent results. Our G and E Series Automated Fluxers consistently prepare fused beads for XRF and solutions for ICP, AA analysis. High quality platinum ware is available for any Fluxer including our PREP program to replace unusable platinum ware with new ones at a fraction of the cost. A line of grinders and pellet presses are available to consistently prepare solid samples for any application.

Booth Number: 309

Choice Analytical, Inc.

Choice Analytical is a leading Manufacturer's Representative focusing on laboratory and process control instrumentation. We are strategically located along the Gulf Coast. This ideal location allows us to stay on top of the latest developments and trends in the Petroleum and Petrochemical industries and enables us to quickly respond to customers' needs and requests. We are the exclusive Sales Representatives for Phase technology and XOS. Choice Analytical, Inc., is debuting a new State of the Art instrument for measuring Saybolt and ASTM color in the compact Color Choice 2.

Booth Number: 1002

Chromperfect

Chromperfect is a complete suite of chromatography software for data acquisition, analysis, comparison, summary and reporting. With a history spanning 35 years, Chromperfect has over 10,000 users around the world, working in every field of chromatography. With a direct interface to chromatography instruments, Chromperfect offers an independent alternative to software supplied by the instrument manufacturer. This allows customers to deploy a common software platform across their facility and a choice of instrumentation regardless of the manufacturer. Made in America. Chromperfect is manufactured in the USA by a privately owned and managed company, with a network of global offices and distributors.

Booth Number: 802

Claisse

Claisse products are internationally renowned for offering a complete solution in sample preparation for XRF, ICP and AA analysis. Electric or gas fusion instruments, borate fluxes, certified reference materials, platinumware, application notes, method development, technical and applicative trainings... Claisse brand is your one-stop shop for sample preparation by fusion. Visit our technical experts at booth 103.

Booth Number: 103

Compass Instruments, Inc.

Compass Instruments is your source for fuels, lubricants and materials testing equipment including CFR Engines, eralytics GmbH, Falex, Normalab, PCS Instruments, Pilodist GmbH and XOS Process Analyzers. A short sampling of our distributed equipment includes Oxidation Stability of Aviation Turbine Fuels, Octane, Cetane, Vapor Pressure, Fuel Lubricity, Distillation, Flash Point, Cold Flow and a wide variety of instruments for tribology testing from Falex and PCS Instruments as well as more extensive petroleum testing equipment capabilities. This state-of-the-art technical

equipment is supported by one of the most experienced sales and service groups in North America.

Booth Number: 306

Consolidated Sciences (CONSCI)

Consolidated Sciences (CONSCI) is a leading provider of independent specialty gas testing services and products. For over three decades CONSCI has proudly specialized in cutting-edge analytical service and close collaboration with customers in everything from advanced R&D projects to routine quality tests. CONSCI offers smart solutions to many analyses that other labs turn away or charge exorbitant fees to do. Some of our best work has been done when everyone else has said it couldn't be done, so we like to say that 'We do the hard stuff!'

Booth Number: 425

Control Analytics

Representative, distributor, and integrator of on-line process monitors, environmental analyzers and systems for industrial use. Specialties include Continuous Emission Monitoring Systems (for EPA reporting), process monitoring, pure water monitoring solutions to major electric utilities and manufacturing clients, safety and industrial hygiene and Ambient Air Monitoring.

Booth Number: 101

CosaXentaur

For over 25 years, COSA Instrument has focused on bringing state-of-the-art measurement solutions to the North American market from leading instrument companies around the globe. The pioneering approach of supporting its partners with full application engineering and service has allowed COSA Instrument to successfully introduce new technologies to solve customer measurement needs. Now combined with the advanced sensor technologies of Xentaur Corporation, the new entity COSA Xentaur is supplying innovative measurement solutions to customers worldwide.

Booth Number: 205

Custom Solutions Group LLC

Custom Solutions Group was formed in April 2004 to provide U.S.-based gas chromatographers with the highest quality, customized solutions in gas chromatography. Since then, CSG operations have expanded to include clients all over the world. In conjunction with Agilent, Custom Solutions Group designs, builds, and commissions new and used gas chromatographs, customized to meet the needs and the specific analytical challenges of scientists, chemists, engineers, and technicians in a variety of industries, including: petroleum, petrochemical, natural gas, industrial gas, specialty gas, specialty chemical, semi-conductor and electronics gas, catalysis, biofuels, and research industries.

Booth Number: 821

DC Scientific, Inc.

DC Scientific is an ISO 9001 registered manufacturer of precision glassware products and ASTM glassware, testing equipment, and accessories for the petroleum laboratory. DC manufactures products ranging from viscometer tubes to FIA Systems to temperature probes for leading brands of equipment. DC is also partnered in the United States with AD Systems, B/R Instrument, Paragon Scientific, Tintometer, Horiba and Tamson to provide world class products for petroleum testing. DC Scientific also provides service for most major brands of petroleum testing equipment and is a

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Tintometer, Tamson, and Horiba Certified Service Center.

Booth Number: 507

DCG Partnership I, Ltd.

Manufacturer of Certified Reference Materials for the Natural Gas and Petrochemical Industries. DCG prepares many certified reference materials that are ISO 17025 and Guide 34 Accredited.

Booth Number: 420

Ducom Instruments Inc

Ducom Instruments is a designer and manufacturer of scientific instruments for materials characterization. Its products are used all over the world by researchers as well as industrial quality assessment departments for their reliability and ease of use. For over 40 years, Ducom has provided instrumentation and laboratory testing and sales support to users seeking to understand and quantify wear, friction and lubrication. With an unparalleled commitment to customer service, innovative design principles and cutting-edge technology, Ducom has emerged as the foremost leader in materials testing equipment.

Booth Number: 111

Element Staffing Services

Element Staffing Services is an industry-leading, scientific and technical staffing company, offering contract, contract to hire, direct placement, and payroll services to companies and organizations within the Petrochemical, Specialty Chemical, Oil and Gas, Biotechnology, Pharmaceutical, Material Science, Food and Beverage, Consumer Care, Medical and Clinical Research Industries. Element's mission is to become a trusted partner by providing the most qualified scientific and technical talent for our clients and by creating pathways for career advancement for our candidates. We promise to deliver results while always abiding by our core principles of integrity, professionalism, and excellence.

Booth Number: 526

Entech Instruments, Inc.

Entech Instruments is a leading developer and manufacturer of analytical instrumentation that supports professionals around the world in Environmental Air Monitoring, Soil & Water Testing, Industrial Hygiene, Food Safety, Flavor & Aroma R&D, Material Emissions Testing, Forensic Investigation, and Clinical Analysis. We specialize in the creation of inert air and gas sample collection equipment, chemical extraction and preconcentration technology, as well as GC/MS sample preparation and introduction technologies.

Booth Number: 1216

Envantage

Envantage offers chromatography instrument and software solutions to refineries and petrochemical laboratories. We build and service applied systems and standardized ISO/ASTM analyzers. Our standardized Dragon SimDist and DHA software applications are in widespread use in hundreds of laboratories around the world. For difficult analytical problems we offer custom instrument and software solutions. We maintain expertise in a variety of hardware, CDS, and informatics systems. Due to our custom software capability we are able to provide seamless integrations of instrumentation and in-house data systems. This year we are pleased to highlight our partnership with VUV Analytics. The VUV detector simplifies the delivery of reliable analytical results in refineries and other petrochemical labs. Visit us to discuss how this detector can improve results and throughput in your lab.

Booth Number: 302

Environmental Express

Environmental Express, Inc., a Cole-Parmer company, is the leading developer, manufacturer and distributor of environmental laboratory equipment and consumable supplies for commercial, governmental, industrial and academic laboratories worldwide. The company provides an entire range of laboratory products used in applications such as water/wastewater analysis, oil and grease analysis, metals analysis and hazardous waste analysis. Their products are sold throughout the world through a strong network of international dealers.

Booth Number: 126

EST Analytical

EST Analytical is a global manufacturer, distributor and service provider of analytical instruments and lab equipment. EST is located in Cincinnati, OH with resources also in Houston, TX. We provide the Nexis and 7000, advanced elemental combustion analyzers that offer fast, accurate and precise analysis of nitrogen, sulfur and chlorine for liquid, LPG, gas and solid samples. We also offer the Flex Robotic Sampling Platform for sample prep and sample introduction including GC liquid injection, headspace and SPME as well as customized HPLC sample preparation. Our chemists are highly-skilled field service engineers across the United States and provide support and 48 hour onsite service responsiveness that is superlative and the envy of our competitors. Times have changed, see why EST analytical is better!

Booth Number: 1220

FACET Analytical Services and Technology, LLC

We are an OEM manufacturing and packaging company located in the USA. Our private label FASTRATE™ Unit Dose Titration Standards eliminate sample preparation, syringes and weigh boats. With water contents of 1 – 25 mg FASTRATE™ can be used for coulometric, volumetric and fully automated Karl Fischer Titration methods. FACET LLC provides manufacturing and packaging services with no minimum order quantities for almost every container/closure system including ampoules, vials, and more, along with custom single-use, unit dose and bulk kit packaging.

Booth Number: 1120

Falcon Analytical Systems & Technology LLC

Falcon's CALIDUS™ Ultrafast Gas Chromatograph (GC) incorporates patented resistively heated stainless steel capillary column module(s) and patented modular design. Analysis is 10-50 times faster than conventional GC's, at one tenth the size, using one tenth the power. It can measure fixed gases and hydrocarbons up to C50 with a full suite of detectors for process, laboratory and transportable applications.

Booth Number: 703

Formulation Inc.

For over 20 years, Formulation has developed instrumentation that can measure and predict the stability and rheology of concentrated emulsions and dispersions. Our Turbiscan series of devices are used industry-wide for the analysis of asphaltene dispersions coherent to ASTM D-7061 as well as quantitative crude oil demulsification analysis. Rheological instruments such as the Fluidicam offers a microfluidic viscosity technique sensitive to very low viscosities and high shear rates and the Rheolaser line can detect particle motion and correlate to multiple viscoelastic

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properties. Allow Formulation to provide solutions and insights for your oil and fuel industry needs!

Booth Number: 305

Frontier Laboratories

Frontier Laboratories, Ltd. designs and manufactures analytical instruments for materials characterization. The main products, supported by a number of accessories and software, include the EGA/PY-3030D Multi-functional Pyrolysis System, the PY-3030S Single-Shot Pyrolyzer, the Rx-3050 series of Rapid Screening Reactors for catalyst screening, and a line of Ultra ALLOY® stainless steel capillary columns. Frontier Lab products are compatible with most gas chromatographs and mass spectrometers from major manufacturers such as Agilent, Perkin Elmer, Shimadzu, and ThermoFisher.

Booth Number: 421

Full Spectrum Analytics

Full Spectrum Analytics, Inc. is a company specializing in the service and repair of a wide range of chromatography equipment including GC, GCMS, HPLC, IC and LCMS. Manufacturers supported include Agilent, Waters, Shimadzu, Perkin Elmer, Scion and more. Drop by our booth for a one stop solution to your service and training needs.

Booth Number: 1112

General Laboratory Supply

A full service laboratory supply company. Selling all consumables in the laboratory industry. Also known for our stock room services custom to your needs.

Booth # 1209

GFS Chemicals

GFS Chemicals manufactures and lists a great number of ACS and Reagent grade materials for use in the research, analytical and manufacturing laboratories. Besides traditional ACS reagents, GFS provides dyes, indicators, Biochemical tested materials and other common laboratory reagents. Additionally, GFS manufactures its own line of high-quality Karl Fischer reagents that covers both volumetric and coulometric applications. Our reagents come with a long shelf life and the lot-to-lot reproducibility. For more information about GFS Chemicals, please visit www.gfschemicals.com or call GFS at (800) 858-9682. GFS will help you realize your goals as a trusted partner: start to success.

Booth Number: 907

Glass Expansion Inc.

Glass Expansion manufactures a wide range of sample introduction products for ICP-OES and ICP-MS instruments, including nebulizers, spray chambers, torches, RF coils, and ICP-MS cones. Regardless of your sample matrix, we can supply the optimum components for your analysis. Innovations include: IsoMist Programmable Temperature Spray Chamber, Elegra Argon Humidifier, TruFlo Sample Flow Monitor, D-Torch Demountable Torch, Niagara Rapid Rinse, Niagara Plus Flow Injection System and Assist Syringe-driven Sample Introduction System.

Booth Number: 919

Government Scientific Source

GSS is U.S. owned and operated with facilities nationwide for complete order processing, warehousing, and distribution services. GSS provides services to the Department of Energy, Department of Defense, National Institutes of Health, and Environmental Protection Agency, among others. Established

in 1991 with the mission to provide the widest range of name-brand products and procurement options, GSS is ISO 9001:2015 Certified, FOCI approved, NQA-1 compliant, and a Veteran Owned Small Business. GSS is a State Contract Holder for CA, AZ, NM, TX, VA, DE, NY and MA. We are also a Grainger Distributor Alliance member and carry their entire catalog for easy procurement.

Booth Number: 108

Gray & Green Biomedical Services Inc

Bio Medical Services, Medical Equ., Medical Exp., Medical Repairs, Medical Purchase

Booth Number: 416

Gray & Green Laboratory Systems, Inc.

Gray & Green Laboratory Systems, Inc. is not your Typical Laboratory Fumehood, Casework and Countertop supplier. We are a full-service laboratory facilities organization. If you have a problem with your laboratory facility and need that problem solved, we are your one stop shop. With our strategic alliance partners, we offer service from the simplest work bench quotation to the Design / Build of a New Facility or Renovation of the Existing facility. No project is too small nor too complicated for our Team. Our coalition members are experienced in the needs of your laboratory requirements. Best of all, we call the Texas Gulf Coast Home.

Booth Number: 803

H2scan

H2scan's hydrogen specific analyzers measure hydrogen in complex, varying gas streams. The H2scan solid state, non-consumable sensor technology provides real-time continuous hydrogen data with no cross-sensitivity to any other gases in the stream. No reference or carrier gas systems are required to reliably and accurately report real-time hydrogen concentrations with fast response times. Combined with low total cost of ownership and minimal maintenance requirements, H2scan can help petrochemical plants save millions of dollars per year. For more info please visit www.h2scan.com.

Booth Number: 905

Hach

For more than 70 years, Hach has been committed to providing solutions for better management and testing of water quality by offering high-quality products that are simple to use and accurate. Our analytical instruments and reagents are used to test the quality of water in a variety of industries and markets around the globe. At Hach, we understand your needs when it comes to maximizing the efficiency and effectiveness of your oil and gas operations.

Booth Number: 624

Haldeman Homme Inc

Since 1924, Haldeman-Homme, Inc. has been a leading resource of facility solution products and services; utilized in education, healthcare, industrial, & government markets. We are a full service supplier of industry leading, quality products, as well as full design, construction, project management, installation and maintenance services company. Our mission is to be part of the team to help make your vision a reality. Clients commend us for doing it by listening and building a relationship of commitment and performance. A 100% Employee company, built around our vision of, Exceeding Customers Expectations.

Booth Number: 1116

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HandyTube Corporation

Since 1948, HandyTube Corporation has been a premium manufacturer of seamless stainless-steel & nickel alloys for coil and straight-length tubing in diverse industries worldwide. Our tubes play a vital role in pressure sensors to flow meters and chromatography. Our capillary tubes are used in many critical applications where accuracy and reliability are paramount. We developed our proprietary Chroma Clean ID™ cleaning process, which removes manufacturing lubricants and other contaminants from the tubing interior. Chromat ID™ drawing process provides ID support during the manufacturing process, creating smoother, consistently uniform ID surface characteristics.

Booth Number: 1123

Hanna Instruments

Hanna Instruments revolutionized pH testing with the introduction of pHep in 1986 now with millions of units sold. Today, Hanna leads the industry in innovation designing, manufacturing, and supporting meters, titrators, probes, buffers, solutions and related equipment. Hanna's 1,000 employees and 65 offices are dedicated to making and supporting the best scientific testing products in the world. Our goal is to make everything better by making testing more accessible, easy and accurate.

Booth Number: 203

HEL INC

HEL is an international company that specializes in reactor systems and related automation tools for process R&D in the pharmaceutical, chemical, biotechnology, and petrochemical industries. Established in 1987 and with clients worldwide, our key strengths are our quality underpinned by ISO 9000, our experienced staff of chemists and engineers, and our range of products. We will be demonstrating our FlowCAT automated continuous flow reaction system, and examples of the laboratory scale reactors we offer, both individually and in parallel platforms. HEL: better chemistry faster

Booth Number: 726

HEMCO Corporation

HEMCO has been a manufacturer of innovative laboratory fume hoods and equipment and serving the petrochemical market for 60 years. HEMCO UniFlow high performance fume hoods are constructed of chemical resistant, flame retardant, lightweight, NO RUST composite resin both interior and exterior. Interior fume chamber is molded one piece seamless with all corners covered. Also exhibited is HEMCO UniLine lab furniture systems, HEMCO UniMax large floor mount hoods, HEMCO EnviroMax lab automation enclosures as vented or HEPA filtered clean workstation models, and HEMCO ModuLab modular lab structures engineered and built to exact size and design requirements.

Booth Number: 1126

Heraeus

Improve the quality of your Sample Preparation by improving the quality of your Platinum Labware. Since 1851, Heraeus has produced the highest quality Platinum Labware (Crucibles, Dishes, etc.) and Precious Metal Products. Our Recycling Program provides a quick, cost-effective way to return damaged material for new. Heraeus, the Perfect Solution for your Platinum Labware needs.

Booth Number: 519

Hitachi High-Tech Analytical Science

Hitachi High-Tech Analytical Science is a leading manufacturer of high-technology instrumentation for materials analysis used within the petrochemical industry. We manufacture X-ray Fluorescence (XRF), Optical Emission Spectroscopy (OES), and Laser-Induced Breakdown Spectroscopy (LIBS) which are field-proven techniques for quality control. Our equipment is used by quality lab managers and PMI (positive material identification) inspectors worldwide for analysis of petrochemicals and the improved safety of pipelines. Email: contact@hitachi-hightech-as.com to speak with one of our experts about fuel analysis or PMI needed for the inspection of pipelines. Phone: 978-850-5580.

Booth Number: 423

HORIBA Instruments, Inc.

HORIBA Scientific offers a variety of elemental analyzers for use by the petroleum industry. These include several types ED-XRF instruments used to measure low levels of sulfur, chlorine and metals in crude oils, refined fuels and blends, biofuels, water, and chemicals. HORIBA will also display the new product: the MESA-7220 with Auto Sampler, as well as the multi-element, low level sulfur in oil analyzer. The newest addition, the TE combustion analyzer family, for rapid low level detection of sulfur nitrogen and halogens will be displayed. The versatile instruments can measure gases, liquids or solids.

Booth Number: 506

Horizon Technology, Inc.

Horizon Technology, Inc., now part of Biotage, is a leader in automated sample preparation systems for the analysis of semi/nonvolatile organic compounds. We offer both disk and cartridge-based extraction automation for a wide variety of applications including environmental, food safety, beverage, agriculture and more. Extract drying, evaporation/concentration and solvent recovery complete the offering. Our Oil and Grease System is the market leader. Come see our proven systems and talk about making your lab more efficient.

Booth Number: 918

HunterLab

HunterLab, the recognized leader in the field of color measurement, is exhibiting its latest innovative technology at GCC- including the Vista. Developed as a transmission color measurement device, Vista offers simultaneous color & haze measurement with one-touch operation. Exceptional speed & accuracy using L,a,b, Pt-Co/Hazen/APHA, L*,a*,b*, and many other provided indices within its "Easymatch Essentials" software, see why HunterLab offers the premier color measurement solutions within the petro-chemical and plastics industries.

Booth Number: 402

ICL Calibration Laboratories, Inc

An ISO/IEC 17025 Accredited Calibration Laboratory and leading supplier of Glass thermometers, Digital Thermometers, Hydrometers, Petroleum glassware, Weight sets, Viscometers, Viscosity Standards, ThermoProbe Digital

Gauging thermometers, Lufkin Oil Gauging tapes, MMC Intl. Tri-Mode (UTI) Gauging tapes, as well as many more gauging equipment and accessories.

Booth Number: 1013

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INFICON

Micro GC Fusion® simplifies and accelerates gas analysis with easy operation and highest quality throughput available. Micro GC Fusion® offers advanced features in a compact, lightweight chassis that is easily transportable, allowing for accurate and rapid analysis where and when it is needed. Building on proven micro gas chromatograph (GC) technology, coupled with temperature programming, Micro GC Fusion® covers extended (up to C12) gas analysis with excellent sensitivity and repeatability.

Booth Number: 320

Inspectorate America Corp.

A global leader of testing, inspection and certification that is well versed in today's O&P market.

Booth Number: 923

Intertek Caleb Brett

Intertek Caleb Brett provides expert qualitative and quantitative analytical assessment services to the oil & gas, chemical and other commodities markets. With a global network of laboratories, 24/7 availability, and more than a 130 years of exceptional customer service, we deliver timely, local, and customer-centric inspection and testing services, providing our clients with full transparency and minimizing risk through the supply chain.

Booth Number: 223

JEOL USA, INC

A leading manufacturer in electron microscopes, analytical instruments, and sample preparation equipment for scientific research and industrial applications. JEOL provides unique solutions for materials and chemical characterization for the petrochemical, refining, and environmental fields. Core products include SEM, TEM, EPMA, MS, GC/MS, GCxGC/MS, multi-channel real-time high resolution gas analysis MS, NMR, and ion beam instruments.

Booth Number: 107

Joint Analytical Systems GmbH

Joint Analytical Systems offers a broad spectrum of GC- and LC solutions based on the Agilent Technologies chemical analysis portfolio, and is a Valve Added Reseller. In addition, we have a number of proprietary products such as the Universal Injections System (UNIS), Cryo Trap, Gas Injections control unit (GICU), EZ-Prep sample fraction collector, Natural Gas Analyzer, Refinery Gas Analyzer, and the only commercially available Atomic Emission Detector. Our organization is support driven and provides customized instruments configurations to meet your application needs. Please visit us at Booth #1108 to see the NEW third generation AED.

Booth Number: 1108

Keit Spectrometers

Keit provides rugged technology for in-line process monitoring of liquids. The IRmadillo FTIR spectrometer uses the power of mid-infrared analysis with a solid-state design to enable real-time reaction analysis. The in situ process spectrometer is used for fuel and contaminant identification (including water) to ensure production quality and efficiency. The compact and rugged IRmadillo provides accurate, real-time results in environments where standard instruments fail. In January 2018, Quantum Analytics successfully showcased the IRmadillo to become the winner of the GCC New Product Showcase.

Booth Number: 419

Kewaunee Scientific Corporation

Kewaunee Scientific Corporation designs, manufactures, and installs innovative products of high quality to the laboratory furniture market worldwide. The Company's corporate headquarters and manufacturing facilities are located in Statesville, North Carolina. Kewaunee provides steel and wood casework, fume hoods, filtered fume hoods, biological safety cabinets, vertical laminar flow cabinets, flexible systems, carts, worksurfaces, and other laboratory related products. For more in-depth information, check out our

website at www.kewaunee.com. Over 110 years of providing solutions for the laboratory environment.

Booth Number: 319

KIN-TEK Analytical, Inc

KIN-TEK Analytical, Inc. manufactures, sells, and supports, calibration gas standard generators, custom configured systems, and dynamic gas dilution systems for use in applications that require trace gas standards. We specialize in instruments and permeation devices that provide NIST traceable standards (ppm, ppb, pppt) for over 500 gases including many species unstable in static cylinder mixtures. Headquartered in La Marque, TX, our products are sold and supported worldwide. Visit our website for a full range of products for creating NIST traceable complex gas mixtures with adjustable analyte concentrations. Come see our new product lines including laboratory, process, and field portable products.

Booth Number: 909

Kirksey Architecture

Kirksey's Science & Technology Team was formally created in 2007 to address the growing demands of three specific markets: Mission Critical, Laboratory and Research & Development, and Industrial. These facilities often require robust coordination efforts across all engineering disciplines. Our team provides innovative solutions, complementing the complexities of each discipline, and simplifying the design and construction process.

Booth Number: 422

Koehler Instrument Company

US Manufacturer of petroleum testing equipment conforming to the latest ASTM, ISO, IP and related international specifications. Major product lines include viscosity, penetration, flash point, tribology and distillation instrumentation. Other products manufactured include oil test centrifuges, oxidation stability baths, cloud, pour and freezing point equipment as well as automatic titration units. Our experienced staff can provide testing services and technical support both in house and off site.

Booth Number: 1017

L-K Industries

L-K Industries is a leading US manufacturer of petroleum sampling and testing equipment. Our products are also applicable to the petrochemical, hydrocarbon, agriculture, food processing and medical industries. Common equipment includes centrifuges, sample heaters, sample tubes, liquid-in-glass thermometers/hydrometers and gauging accessories. Our motto is "Demand a Higher Standard". All testing equipment conforms to API and ASTM standards. L-K manufactured the first Class I, Division 2 certified laboratory oil centrifuge. With the acquisition of Miller-Weber of Texas and relocation of the ISO/IEC 17025 accredited laboratory,

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we now calibrate glassware and equipment in-house.

Booth Number: 206

Lab Manager

Today in print and online, Lab Manager continues to grow as the lab professional's most important publication. It is focused on the lab professional in a leadership role who is responsible for setting the lab's direction and identifying, recommending and purchasing technology. It also offers a wide breadth of knowledge to the researchers in the field using lab equipment and seeking to learn about the latest in new technologies for their labs.

Publication Bin

Lab Products, Inc.

Chromatography Supplies, Environmental Sample Containers, Lab Ware

Booth Number: 414

Labtopia, Inc.

Labtopia, Inc - Quality Consulting, Training, Technical Staffing, Informatix. Labtopia incorporates quality into processes for technology based organizations in manufacturing environments, laboratories, government, and healthcare. Let us help you choose the right data systems, talent, quality tools, and training for your organization.

Booth Number: 811

LabVantage Solutions, Inc.

LabVantage Solutions, Inc. is the leading global laboratory informatics provider. Our industry-leading LIMS and ELN solution and world-class services are the result of 35+ years of experience in laboratory informatics. LabVantage offers a comprehensive portfolio of products and services that enable companies to innovate faster in the R&D cycle, improve manufactured product quality, achieve accurate recordkeeping and comply with regulatory requirements. LabVantage is a highly configurable, web-based LIMS/ELN that powers hundreds of laboratories globally, large and small. Built on a platform that is widely recognized as the best in the industry, LabVantage can support hundreds of concurrent users as well as interface with instruments and other enterprise systems.

Booth Number: 116

LabWare, Inc.

LabWare is recognized as the global leader in providing enterprise scale laboratory automation solutions. Our Enterprise Laboratory Platform combines the award-winning LabWare LIMS™ and LabWare ELN™, a comprehensive and fully integrated Electronic Laboratory Notebook application, which enables companies to optimize compliance, improve quality, increase productivity and reduce costs. LabWare is a full service provider offering software, professional implementation services and validation assistance, training, and world class technical support to ensure our customers get the maximum value from their LabWare products.

Booth Number: 1218

LANCER SALES USA INC

Lancer is a global leader in laboratory washing and sterilization products for life science and industrial laboratory applications. Lancer manufactures the broadest range of laboratory labware washing systems providing solutions for critical cleaning applications including those for general research labs, petroleum and industrial applications, and QA/QC labs (validation available). Lancer also offers a

complete line of steam sterilizers and cleaning chemicals.

Booth Number: 1022

LAUDA-Brinkmann, LP

LAUDA is the global leader in manufacturing innovative temperature control equipment and analytical devices designed for testing viscometry and tensiometry. With more than 60 years of experience, around 430 global employees and 12 international companies, LAUDA is positioned to support our customers in their local market with industry leading technical solutions and applications guidance.

Booth Number: 317

LAWLER Manufacturing Corp.

A leading manufacturer in petroleum testing instruments since 1945. Focusing our cutting edge technology in hot, cold, and physical testing analysis. Our instruments test cloud point, pour point, CFPP, freeze point, oxidation stability, foam, corrosion, rust, water separability, and many more as per ASTM, ISO, IP, FTM, DIN and other international specifications.

Booth Number: 1210

Lazar Scientific Inc

Lazar Scientific, Inc. is the factory authorized provider of instrumentation and equipment from Stanhope Seta Co., Seta Analytics, Inc., Orbis BV, throughout the United States and XOS throughout the Midwest. With years of expertise, our team provides sales and service support for the physical property characterization of liquids including flash point, viscosity, cloud, pour and freezing points; distillation, corrosion properties, fuel cleanliness, penetration and oxidation stability; among others. We are dedicated to providing analytical solutions, quality instruments and reliable service to our customers.

Booth Number: 621

LCGC

LCGC is the largest dedicated publication in North America serving the chromatography market. Through unbiased peer-reviewed content, trusted troubleshooting advice, and best practice application solutions, we serve as a mentor to laboratory-based analytical chemists so they can enhance their proficiency in modern chromatographic technique and instrumentation. With Commitment to editorial excellence, LCGC covers all key growth segments in the industry.

Booth Number: 220

LECO Corporation

LECO's technologies for separation science resolve complex samples and pioneer high-sample throughput using GCxGC, GCxGC-TOFMS, and GC-TOFMS. A unique combination of easy-to-use software and advanced instrumentation provide an innovative solution for today's most demanding applications, including food, flavor/fragrance, petroleum, environmental, and metabolomics. Our new benchtop GC-MS instrument, the Pegasus BT, gives users all the data they could ever need from a single sample run.

Booth Number: 603

LGC Standards

Calibration Standards and CRMs for petroleum testing including metallo-organic standards for the analysis of contaminants, wear metals and metal additives by ICP, XRF and RDE. Sulfur, polysulfide oil, chlorine and nitrogen standards in petroleum matrices for ASTM methods; biodiesel standards; hydrocarbon standards for ASTM, EPA, PIANO, and PONA methods by GC analysis; reference materials for acid

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number, base number, soot, fuel dilution, glycol in oil, distillation, moisture (Karl Fischer); petroleum physical testing standards in accordance with ASTM methods; Proficiency Testing Samples in petroleum products. Instrument consumables.

Booth Number: 123

Magnasafe Int'l

Magna-Safe International, Inc. designs and manufactures top, side, and bottom entry mixers and vessels for High Pressure Reactors, Hydrogenators, Blending, and Storage, covering a wide range of products and industries. Each application is closely scrutinized to determine the optimum horsepower and impeller selection. All process and mechanical selections are verified using sophisticated computer software and are unconditionally warranted.

Booth Number: 1020

Malvern Panalytical

Malvern Panalytical technologies are used by scientists and engineers to solve characterization challenges associated with maximizing productivity, developing better quality products, and getting them to market faster. Please visit our booth to learn more about our rheology, elemental analysis of fuels and lubricants, and particle analysis and identification solutions. Visit booth 103 to speak with our technical experts.

Booth Number: 103

Metrohm USA

From routine moisture analysis to sophisticated anion and cation quantification, Metrohm offers a complete line of analytical laboratory and process systems for titration, ion chromatography, electrochemistry and spectroscopy.

Booth Number: 817

METTLER TOLEDO

METTLER TOLEDO is a leading global manufacturer of precision instruments. The Company is the world's largest manufacturer and marketer of weighing instruments for use in laboratory, industrial and food retailing applications. The Company also holds top-three market positions in several related analytical instruments markets and is a leading provider of automated chemistry systems used in drug and chemical compound discovery and development. Additional information about METTLER TOLEDO can be found at www.mt.com/lab.

Booth Number: 110

MilliporeSigma

MilliporeSigma, the life science business of Merck KGaA, Darmstadt, Germany, has 19,000 employees and 72 manufacturing sites worldwide, with a portfolio of more than 300,000 products enabling scientific discovery. MilliporeSigma comprises the legacy EMD Millipore organization and Sigma-Aldrich Corporation following its acquisition by Merck KGaA, Darmstadt, Germany in 2015. Our deep offering of products serve several analytical workflows prevalent in petroleum and chemical industries, namely gas chromatography, liquid chromatography, UV/Vis, and titration. We also include a comprehensive offering of reference materials, reagents, and lab water purification.

Booth Number: 704

MOCON, a unit of AMETEK

On-line VOC gas analyzers, including MOCON's Baseline® automated gas analyzers for continuous, real-time fence line monitoring, hydrocarbon exploration, and surface logging.

Includes Baseline® PetroAlert® Series gas chromatographs, total hydrocarbon analyzers (includes non-methane, and heated analyzers) for quantitatively and qualitatively analysis of C1-C5 hydrocarbons, BTEX, and much more analyses; plus OEM piD-TECH® photoionization detectors (PID) and sensors. Markets include environmental monitoring, toxic gas detection, surface logging during oil and gas exploration, petrochemical, chemical, industrial and specialty gas trace impurity analysis.

Booth Number: 1119

Nanalysis Corp.

Nanalysis Corp. has developed the marketing-leading NMReady-60 family of benchtop NMR spectrometers. The only all-in-one high-resolution NMR Spectrometer, these high-performance, innovative spectrometers operate at a fraction of the size, cost and maintenance of traditional NMR instrumentation. Compatible with a variety of nuclei (e.g., ¹H, ⁷Li, ¹¹B, ¹³C, ¹⁹F, ³¹P) and a number of 1D and 2D NMR experiments. Please inquire for more about these easy-to-use NMR tools that can improve your workflow.

www.nanalysis.com

Booth Number: 224

NETZSCH Instruments North America, LLC

The Analyzing & Testing business unit of the develops and manufactures a complete high-precision instrument line for thermal analysis and thermophysical properties measurement, as well as offering world class commercial testing services in our laboratories. Our instrumentation is employed for research and quality control in the polymer sector, the chemical industry, the areas of inorganic and building materials, and environmental analysis. Instruments for controlling – such as for in-situ cure monitoring – complete our product line.

Booth Number: 200

Nexeo - S.T. Labs

S.T.Labs is an independent division inside Nexeo. We have been an independent analytical laboratory providing referee testing for the petroleum and petrochemical industry since 1979. We are an ISO 17025 accredited and required to maintain the necessary firewall to protect our client's confidential information and security. We are 24/7 365 days a year operation and adhere to ASTM, IP, EN and ISO test methodologies.

Booth Number: 1023

Ohio Lumex

Ohio Lumex is a worldwide leader in environmental monitoring, with four core areas of expertise: -Instruments: design, manufacturing, and distribution of state-of-the-art Continuous Emissions Monitors, Sorbent Trap Sampling Systems, Oil Spill Detection Systems, and Optical Oxygen Sensors. -Sorbent Traps: wide range of the highest quality sorbent traps, including Hg, HCl, HBr, NH₃, SO₃, Se, As, customized to source conditions. -Laboratory Services: a NELAP Accredited Laboratory with the industry's highest quality and fastest turnaround. -Field Services: including environmental testing and consulting, instrument training and service, and onsite laboratory analysis.

Booth Number: 1212

OI Analytical

Located in College Station, TX, OI Analytical, a Xylem brand, designs and manufactures laboratory instrumentation for the oil, gas, and petrochem industries to help maximize productivity, improve product quality, and meet

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environmental regulations. Our solutions include custom-configured GC/GC-MS systems and detectors, purge and trap sample concentrators, continuous flow chemistry analyzers, TOC analyzers, refractometers, titrators, and more. The S-Pro 3200 Sulfur Analysis GC System provides increased selectivity and superior sensitivity for the analysis of sulfur and hydrocarbons, while our new 1080 TOC Analyzer easily handles high-salt and difficult effluent samples with a lower cost of ownership. We offer friendly, expert technical service and support worldwide.

Booth Number: 513

PAC

PAC is a leading global manufacturer of advanced analytical instrumentation for laboratories and online process applications. With a product portfolio of over 200 testing instruments, we offer cutting-edge technology and best-in-class research and development to support our core technologies: gas chromatography, elemental analysis, physical properties, fuels composition and laboratory automation. PAC has combined the world's most respected and long-established brands of analytical and testing equipment into a single organization. Our brands include: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Cambridge Viscosity, Herzog, ISL, Phase Technology, and PetroSpec.

Booth Number: 411

Pace Analytical Services LLC.

Pace Analytical's Instrument Support Group (ISG) has established a solid reputation for immediate response, excellent troubleshooting skills, and a comprehensive knowledge of chromatography systems. There's nothing complicated or unusual about our customer service. It's fairly simple. We hire the industry's best people. All repairs are performed by OEM traceable trained instrument support personnel—the majority who have worked in the laboratory with method specific experience as chemists, analysts or PhD-level scientists. As an ISO 9001:2008 accredited division, you can rest assured that the level of service, support an ongoing product knowledge is what set us apart from the competition.

Booth Number: 218

Pall Corporaton

Pall Corporation is a filtration, separation and purification leader providing solutions to meet the critical fluid management needs of customers across the broad spectrum of industrial applications in the refinery and petrochemical arena. We specialize in mobile-phase filtration and sample prep to increase chromatography column life and ensure accurate results. Pall works with customers to advance health, safety and environmentally responsible technologies. The Company's engineered products enable process and product innovation and minimize emissions and waste.

Booth Number: 725

Park Systems

Park Systems is a world-leading manufacturer of atomic force microscopy (AFM) systems with a complete range of products for researchers and industry engineers in chemistry, materials, physics, life sciences, and semiconductor and data storage industries. Park's products are used by more than a thousand institutions and corporations worldwide. Park's AFM provides the highest data accuracy at nanoscale resolution, superior productivity, and the lowest operating cost, thanks to its unique technology and innovative engineering. Park Systems, Inc. is headquartered in Santa Clara, California with

its global manufacturing and R&D headquarters in Korea.

Booth Number: 1224

Parker Hannifin

Parker Gas Generators for analytical instruments eliminate the expense and danger associated with high pressure compressed gas cylinders. The inconvenience of changing cylinders and supply interruptions will no longer be a concern. A Parker Gas Generator offers price stability and eliminates long-term commitments, contract negotiations and tank rental fees. A continuous supply of consistent purity is available 24/7 without the need for operator attention. Parker offers Gas Generators for a variety of analytical applications including LCMS, GC, FTIR, and NMR. Parker offers global distribution and support.

Booth Number: 221

Particle Sizing Systems-an Entegris Company

Contamination is the single greatest cause of oil degradation. If not controlled or prevented, contamination can cause systems to fail catastrophically. Quantifying fluid cleanliness is often performed using a liquid particle counter, such as the PSS AccuSizer. The AccuSizer uses SPOS technology which quickly identifies and quantifies contamination particles by counting and sizing them individually with no gimmicky involved.

Booth Number: 322

PerkinElmer

PerkinElmer is a global leader committed to innovating for a healthier world. Our dedicated team of 8,000 employees worldwide are passionate about providing customers with an unmatched experience as they help solve critical issues especially impacting the diagnostics, discovery and analytical solutions markets. Our innovative detection, imaging, informatics and service capabilities, combined with deep market knowledge and expertise, help customers gain earlier and more accurate insights to improve lives and the world around us.

Booth Number: 913

Perma Pure

Perma Pure LLC is the world leading provider of high-performance gas conditioning solutions, including dryers, humidifiers and accessories. As the exclusive manufacturer of Nafion™- tubing, we deliver best-in-class performance, quality and reliability across a wide range of applications and conditions. That's why Perma Pure is the trusted choice of scientific and analysis equipment and fuel cell market leaders.

Booth Number: 124

Petro Industry News

Petro Industry News (PIN) is a world-wide publication that focuses on the instrumentation sector of the oil and petroleum related industries. The magazine is published every 2 months and reaches a global audience of over 30,000 buyers or end-users of analytical equipment in refineries, plants and petroleum/petrochemical labs, with a further readership of over 20,000 receiving the digital version. The publishers of PIN recently launched PEFTEC, Europe's only conference and technical exhibition for analytical instrumentation for refining, petroleum and petrochemical applications. In addition, there is a website (www.petro-online.com) which is updated daily with the latest news, events, product launches and application articles of relevance to analytical chemists working within the oil/petroleum related sectors. PIN is part of International Labmate, a publishing house which recently celebrated 40 years of

2018 EXHIBITORS

specialising in magazines related to analytical instrumentation technology. Other magazines in the International Labmate range include International Environmental Technology, Asian Environmental Technology, International Labmate, Lab Asia, Measurement Analysis China and Chromatography Today.

Booth Number: 207

Petrolab, a unit of AMETEK

Petrolab, AMETEK Oil & Gas, is your source for the latest in Analytical Laboratory Instrumentation. Grabner Instruments designs and manufacturer's the most advanced selection of products for the petroleum industry. Petrolab Company provides products for analysis of Octane, Cetane, Flash Point, Distillation, Vapor Pressure, Viscosity, Color and Water Content. Be sure to check out the Online Vapor RVP process analyzer that determines vapor pressure of gasoline, crude oil, LPG, NPG and vapor-liquid ratio (LVR) of gasoline.

Booth Number: 1115

Phenomenex

Phenomenex is a global technology leader committed to developing novel analytical chemistry solutions that solve the separation and purification challenges of researchers in industrial, government and academic laboratories. Phenomenex's core technologies include products for liquid chromatography, gas chromatography, and sample preparation; bulk purification chromatographic media; and chromatography accessories and equipment.

Booth Number: 1122

Pollution Equipment News/Rimbach

POLLUTION EQUIPMENT NEWS reaches environmental professionals responsible for the environmental testing and pollution abatement in their organization. Target industries are water, wastewater, air and hazardous waste. INDUSTRIAL HYGIENE NEWS reaches occupational safety & health professionals and provides information on products and services to measure and control various health and safety hazards in the work environment.

Booth Number: 625

Premier Lab Supply Inc

PREMIER manufactures and distributes XRF sample preparation consumables, equipment and platinum ware items. Our platinum re-fabrication service will turn your old metal back into new again for a fraction of the cost of purchasing new. Products that qualify for re-fabrication include anodes, beakers, electrodes, evaporating dishes and crucibles/lids in many different shapes, weights and dimensions. In addition, we offer a full range of fusion crucibles and molds. PREMIER's mission remains simple: "to offer the best prices in the industry for XRF consumables and other related sample preparation products and services without ever compromising quality".

Booth Number: 610

Process Instruments, Inc.

Process Instruments, Inc. specializes in Raman spectroscopy for on-line process control throughout the refinery. We offer ATEX, IEC EX, and NRTL (ETL) certified Raman systems with multiplexing capabilities up to 17 streams. With detection capabilities < 2 ppm for many components. Raman can be used for measuring most down stream petroleum product parameters for gasoline, diesel and Jet fuels. In addition, we offer upstream applications including, LPG Alkylation feed streams, Alkylation acid content, Crude Unit optimization by measuring Flash, Pour and Cloud points. Reformer optimization by measuring incoming and outgoing, Sulfur,

Olefin, and Octane levels. Raman offers an economical opt.

Booth Number: 511

Protectoseal

Manufacturer of fuel octane analyzer systems and vapor management products.

Booth Number: 605

Proton Onsite

Lab: Proton OnSite is the world's leading supplier of on-site generators for laboratories. Proton Onsite offers a safe, affordable and high-performance solution for onsite hydrogen generators, nitrogen generators, air compressors, air generators and zero air purifiers. Proton's units are manufactured in a wide range of space saving stackable systems and we offer a complete line of advanced equipment for the LCMS and GC lab market. For more information please visit www.protononsite.com

Booth Number: 602

PSL Rheotek USA, Inc

PSL Rheotek USA, Inc. will display a new range of kinematic viscosity & temperature measuring apparatus. Applications include kinematic viscosity of jet fuels, low temperature lubricants, residual, distillate & biofuels. The company also specializes in dilute solution viscosity of polymers, cellulose, electrical papers & bio-polymers. A general range of viscosity apparatus includes glass capillary viscometers, baths, chillers, asphalt vacuum system, reference standards and digital thermometers. The company provides service for its apparatus throughout the United States.

Booth Number: 620

Purge Solutions, Inc.

Purge Solutions, Inc. is an OEM of type, X, Y and Z Purge & Pressurization Systems, Enclosures, Window Kits and Vortex Cooler Systems. That are certified ATEX, CEC, IECEx, NEC and NFPA with the CE mark by recognized certification agencies for installation and use in Zone 1 & 2 or Division 1 & 2 hazardous locations in the food processing, pharmaceutical and oil & gas markets.

Booth Number: 702

Qmicro B.V.

Qmicro has developed the "DynamIQ" micro GC gas analyzer product line and these on-line gas monitors are supplied in quantities - in an application specific configuration - to selected customers. These customers are typically System Integrators, OEM-ers or Expert Distributors. Hence the instruments are configured for one specific application, after which these are sold as analyzers for this single application.

Booth Number: 618

Qorpak, Division of Berlin Packaging

Booth Number: 1011

Quantum Analytics

Quantum Analytics is a value-added distributor for analytical instrumentation across the United States. We make it easier for customers to get the lab equipment they need through flexible financing solutions and customized technical support. We maintain a multi-million dollar inventory of new and refurbished instruments available for immediate delivery. Quantum Analytics is an authorized distributor, financing partner and service provider for Agilent Technologies. We provide customer training at our headquarters in Foster City, California and at our Southern Technical Centers in North

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Houston, Texas. Our technical services include cross-platform system integration, installation, training.

Booth Number: 920

RAMIN' Corp.

Ramin' Corporation has produced and distributed environmental & petroleum glassware, laboratory & scientific apparatus, custom glass designs, precision machined metals and plastics since 1984. Our facility manufactures ISO, ASTM, and OEM products for petroleum testing and specialty applications. Custom design, calibration, and certification services are available.

Booth Number: 607

Restek Corp

Chromatography is what Restek does, and chromatography is who we are. We are an independent, international, and diverse team of employee-owners not bound to a specific brand of instrument or geographic region. We live and breathe phase chemistry, peak separations, resolution, and inertness because while chromatography may be a necessary tool in your business, it is our business. And it is a business that we directly serve across 100+ countries and six continents with unrivaled Plus 1 service, applications, and expertise. From LC and GC columns to sample preparation, reference standards to accessories, Restek is your first and best choice for chromatography. Restek is Pure Chromatography.

Booth Number: 303

Rigaku Americas Corporation

Rigaku manufactures a complete range of XRD and XRF instruments and components for research, testing, industrial process control, and product development. Systems include the MiniFlex benchtop XRD and Supermini 200 benchtop WDXRF systems and the SmartLab® multi-purpose diffractometers with SAXS and in-plane capabilities, D/MAX RAPID II micro-diffraction systems, S-MAX3000 small angle scattering systems, and the ZSX Primus series of high-powered WDXRF spectrometers with mapping capabilities, in either tube-above or tube-below configurations.

Booth Number: 122

Rudolph Research Analytical Corp

Rudolph Research Analytical is a leading, US based manufacturer of high accuracy, bench-top Density Meters, Refractometers, and Sample Automation instrumentation for the Petroleum and Chemical Industry. Density Meters comply with ASTM D4052, D5002, ISO 12185 for determination of API Gravity, Density and Specific Gravity. We also manufacture Refractometers compliant to ASTM D1747, D1218. Systems are available with and without automation, heated sample loading.

Booth Number: 521

S&S Professional Services LP

Based in Houston, TX, S&S has been offering scientific placement expertise to the chemical and petrochemical industries for the past 24 years. As the chemical and petrochemical industries continue to grow and flourish, S&S is devoted to staying in touch with new technologies implemented in laboratory environments and the high standard of job specific experience of its placements.

Booth Number: 1024

SCIENCIX

Sciencix has been a trusted provider of top brand HPLC Instrumentation products for over 30 years. Our products are

equivalent to the OEM products. Our mission is to serve our customers by delivering quality products at a reasonable price while exceeding expectations, every moment.

Booth Number: 225

Scientific Solutions

Presenting: TEDIA, High Purity Laboratory Solvents, especially for Petrochemical Analysis with Certified Ultra Low Sulfur and Nitrogen. Also all other grades such as ACS, Absolv, Anhydrosolv, Bio, HPLC/Spectro, LCMS, GC USP/NF, Aquapoint Karl Fischer Reagents and High Purity Acids. Specialty chemicals, Custom Synthesis and Custom packaging also available.

Booth Number: 1208

Scion Instruments

Built on the history of Chrompack and Varian in GC and GC-MS, SCION Instruments was acquired by the Techcomp group in 2014. SCION Instruments designs, develops, supplies and supports GC, GC-MS and Compass CDS (chromatography data system) product lines. The company prides itself for manufacturing in Europe at facilities in Goes, The Netherlands with its headquarters based in Livingston, Scotland. SCION Instruments maintains a global infrastructure to support sales around the world. As well as providing support for SCION Instruments customers, there is also service and support available for users of legacy Varian systems.

Booth Number: 1009

SCP SCIENCE

A successful, privately owned manufacturer of analytical equipment, supplies, reagents and reference materials. Products include: XRF supplies (presses, grinders, sample cups and films); CONOSTAN-Oil based standards (metallo-organic, TAN/TBN, viscosity and S-in-oil); ICP/ICP-MS supplies (nebulizers, spray chambers, torches, cones, pump tubing and calibration/QC standards); Microwave digestion and extraction systems; DigiPREP graphite block digestion systems for metals and TKN; EasyPREP environmental analyzers (for BOD and COD), EasyPREP chemistry analyzer (for pH, conductivity and alkalinity), and EasyPREP liquid sample handling for ICP/ICP-MS sample preparation.

Booth Number: 1121

Selerity

Booth Number: 304

Separation Systems, Inc.

Separation Systems offers GC and GC-MS based analysis systems for petroleum refining, bio-fuels and petrochemical applications. Our systems are comprehensive in nature and include a GC or GC-MS, our own specialized hardware and software, reference & calibration standards, consumables, training and support. While the majority of our systems are designed to meet the international standard method requirements (ex. ASTM, EN, ISO), we also design systems for special requirements including custom software. We would be pleased to discuss ways to overcome your analysis challenges. Or visit us at www.separationsystems.com.

Booth Number: 321

SepSolve Analytical

SepSolve Analytical is dedicated to helping analysts select the best equipment for GC and GCxGC analysis of complex mixtures, with a particular focus on the challenges presented by petrochemicals. A cornerstone of our product portfolio in this field is the BenchTOF™ mass spectrometer, which offers improved isomer speciation through its Tandem Ionisation® technology for the simultaneous production of 70 eV and 'soft'

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EI mass spectra. Other products offered include our own cryogen-free INSIGHT™ flow modulator and ChromSpace® software for GC×GC, as well as sample preparation equipment, robotic autosamplers and thermal desorbers from leading global suppliers.

Booth Number: 105

SGS

SGS provides a wide range of independent laboratory testing services and expertise on a 24/7/365 basis. With laboratories and offices across the Gulf Coast region, the USA, and the world, SGS supports quality testing, research, troubleshooting, back-up, and other testing needs and requirements. Testing standards include ASTM, ISO, and many others.

Booth Number: 518

Shimadzu

Shimadzu is the leading provider of analytical measurement and testing instrumentation for a broad range of applications in science and industry, including foods, pharmaceuticals, life science, environmental, chemicals, and forensics. Our extensive portfolio of high-quality system platforms provides customers with unparalleled solutions-based offerings and we encourage results-driven collaborations that meet growing customer demands. Instruments include chromatographs, mass spectrometers, spectrophotometers, atomic spectrometers, X-ray spectrometers, thermal & particle size analyzers; Total Organic Carbon analyzers; data systems/software; balances; and materials testers.

Booth Number: 403

SICK, Inc.

SICK's proven technologies for in-situ and extractive gas analysis and measurement instrumentation for dust, opacity and flow ensure the best solution for your emission monitoring and process control applications. Our products include solutions for flare measurement, custody transfer, process measurement and system integration. SICK has over 70 years combined experience serving the industries of power, cement, refining, petrochemical, chemical, waste incineration, water treatment, pulp and paper, steel and other areas.

Booth Number: 209

Siemens Industry, Inc

Siemens is a leading provider of process analyzers and process analysis systems. We offer customers the best possible solutions for their application based on innovative analysis, technologies, customized systems engineering, sound knowledge of their applications and professional support. Siemens is your qualified partner for efficient solutions that integrate process analyzers in your automation systems in the process industry.

Booth Number: 1213 - Mobile Lab

SilcoTek Corporation

SilcoTek® Corporation is the leader in high performance coatings used in process, analytical, industrial, oil and gas applications. Dursan® a hard durable coating is designed to extend the life of stainless steel components while creating chemical inertness. SilcoTek's SilcoNert® 2000 (Sulfinert®) treatment provides proven performance for hydrogen sulfide, mercury, ammonia and many other active compounds. Find us on the web at www.SilcoTek.com or call (814)353-1778.

Booth Number: 418

Specac USA

Specac a European manufacturer and developer of innovative products with global utilization in FTIR accessories, XRF sample preparation & optical accessories, which further the use of spectroscopy. Specializing in process cells, reflectance and transmission products utilized in FTIR analysis of gas, liquids and solids for the forensic, pharmaceutical, environmental, chemical, petrochemical oil and gas industries. Indispensable results for quantitative and qualitative analysis.

Booth Number: 100

SpectraSensors, an Endress+Hauser Company

SpectraSensors, an Endress+Hauser company, is a leading global provider of laser-based process instrumentation. We design and manufacture TDLAS and Raman analyzers for on-line monitoring of H₂O, H₂S, CO, CO₂, C₂H₂, NH₃, H₂, N₂, and other components in the process gas streams. Our analyzers are used in the natural gas, synthetic natural gas, LNG, gas processing, petrochemical, refinery, and atmospheric testing industries.

Booth Number: 117

Spectro, a unit of AMETEK

SPECTRO, AMETEK Materials Analysis Division - Our company designs, manufactures, and services a broad array of atomic spectroscopic instrumentation used to analyze the elemental composition of solids and liquids. Using ICP, ICP-MS, optical emission or energy dispersive x-ray fluorescence (ED-XRF) measurement techniques, SPECTRO's instruments address the analysis requirements of a variety of end markets, including, metal production and processing, environmental testing, hydrocarbon processing, geochemical, aerospace, food processing, and pharmaceutical.

Booth Number: 1113

Spectrum Quality Standards

Manufacturing of hydrocarbon standards for the petrochemical industry.

Booth Number: 903

SPEX SamplePrep

SPEX SamplePrep/Katanax manufactures superior equipment for sample preparation. Our Katanax® Fluxers are automated fusion machines that prepare fused beads for XRF analysis and solutions for AA, ICP, and wet chemistry analysis. Our 3636 X-Press® is a 35 ton laboratory press that presses sample pellets for XRF. Typical samples for our presses and fluxers include Cement, Rocks, Minerals, Soil & Ceramics. Visit www.spexsampleprep.com/katanax for more information.

Booth Number: 326

StanCo Scientific, Inc.

StanCo Scientific is a leader in manufacturing alternative digital electronics for the CFR legacy engine. Our innovations have catapulted the legacy engine industry into the 21st Century. With our years of expertise, we still provide service support and sales for the physical property testing instruments including, flash point, viscosity, cloud, pour and freezing points, distillation, corrosion properties, oxidation stability, among others. We are committed to providing quality instrumentation, analytical solutions and reliable service to our customers. **Booth Number: 606**

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Superior Laboratory Services, Inc.

Laboratory design, testing, and services. We are laboratory facility design specialist, and sell hoods from multiple companies, cabinets, lab tops, and many types of equipment.

Booth Number: 201

Tannas Co. & King Refrigeration

Proven products. Trustworthy service. Tannas laboratory instruments are used to test engine oils and lubricants: • Quantum™ Oxidation – RPVOT • New TBS™ 3000 HTHS • Tannas Foam Air Bath – TFAB™ • Noack S2 Volatility Test • Thermo-oxidation Engine Oil Simulation Test – TEOST™ • Scanning Brookfield Technique - SBT™ King Refrigeration offers solutions for Brookfield Viscosity, Cloud & Pour Point, MRV, and KV.

Booth Number: 216

TE Instruments

Trace Elemental Instruments is the premier manufacturer of elemental combustion analyzers for Total Nitrogen (TN), Total Sulfur (TS), Total Halogens (TX) and Total Organic Carbon (TOC). Your key supplier for elemental combustion solutions.

Booth Number: 724

TECH 2000

As a forefather of the scientific staffing industry, for the past two decades TECH 2000 has been blazing the trail in placing scientific and laboratory personnel. With offices in Texas and Louisiana, TECH 2000 provides clients qualified candidates who possess the scientific skills necessary to meet their laboratory positions - from entry level technicians and chemists, to senior scientists and management professionals, on a contract, contract-to-hire, or direct hire basis. As pathfinders with a long history of working with a variety of client laboratory facilities and a desire to stay current on challenges affecting the scientific community, we have stayed true to our core expertise of staffing for the laboratory.

Booth Number: 211

Texas Scientific Products

TSP is a respected manufacturer, distributor, and supplier of a whole array of consumables & sample introduction systems for ICP & ICPMS including nebulizers, spray chambers, torches, & pump tubing. We provide TSP brands as well as the brands essential for all major manufacturers of ICP-MS & ICP-OES, AA, XRF & Viscometers. We offer inorganic & organic standards, vials & probes compatible with autosamplers.

Booth Number: 616

Texas Valve and Instruments

Texas Valve & Instruments, LLC is a manufacturer of specialty items for the hydrocarbon measurement industry. Our products include gas measurement instrument manifolds and valve, spun dot type cylinders & accessories & gas detection tubes (stain Tubes)

Booth Number: 1025

Thermo Fisher Scientific

Thermo Fisher Scientific™ offers a comprehensive portfolio of Oil & Gas workflow solutions to best suit your upstream, midstream, and downstream processes.

Booth Number: 902

Thermo Fisher Scientific - Fisher Scientific

Thermo Fisher Scientific Inc is the world leader in serving science. Through our premier brands - Thermo Scientific, Fisher Scientific, Invitrogen, Applied Biosystems and Unity

Lab Services - we offer an unmatched combination of innovative technologies, purchasing convenience and comprehensive support. We help our customers accelerate their research, solve complex analytical challenges and increase laboratory productivity. Our mission is to enable our customers to make the world healthier, cleaner and safer.

Booth Number: 1124

TOSOH BIOSCIENCE LLC

As experts in GPC, Tosoh Bioscience offers dedicated systems for GPC analysis, the EcoSEC® GPC System and the EcoSEC High Temperature GPC System. In addition, TSKgel® GPC columns for ambient and high temperature applications are available. Both EcoSEC GPC Systems deliver unsurpassed efficiency, reliability, and reproducibility.

Booth Number: 626

Trespa North America

Trespa is the world leader in laboratory work surfaces, shelving, wall lining and phenolic resin casework construction material. Trespa's specific product lines offer light weight, non-porous, high chemical resistance, cleanability, durability and no price increase for color options. Trespa phenolic resin is the preferred choice for today's modern laboratory environments.

Booth Number: 525

ULVAC Technologies

ULVAC Technologies, Inc. is a full service vacuum technology company. We will be featuring our wide range of small, reliable, lab-scale pumping solutions. This includes our magnetically sealed rotary vane pumps, which will never develop shaft-seal leaks, and small corrosion resistant diaphragm pumps.

Booth Number: 1026

Uniphos Envirotronic, Inc.

Based in Sugar Land, Texas, Uniphos Envirotronic Inc. is a subsidiary of Uniphos Envirotronic Pvt Ltd., which is one of the leading manufacturers, suppliers and exporters of gas detection & monitoring equipment in India. Safety is a core value at Uniphos Envirotronic Inc., and our goal is to ensure that our detection and monitoring equipment provides reliable and immediate indications of toxic and flammable gas concentrations. Uniphos Envirotronic Inc. offers a wide range of gas detection tubes, specialty tubes, strips, gas sampling bags and fumigation clearance and monitoring equipment. Uniphos is pleased to be able to offer our own proprietary brand of tubes as well as KwikDraw™ tubes.

Booth Number: 424

Vacuubrand, Inc.

VACUUBRAND offers exceptionally quiet, corrosion-resistant, oil-free vacuum pumps with ultra-long service intervals for labs, scale-up and OEM use. Products include both simple dry pumps and self-regulating, automated vacuum systems for critical evaporative applications. The line also includes the unique HYBRID pumps, which reduce oil-changes by 90%, even in corrosive applications. VACUUBRAND will also show corrosion-resistant digital vacuum gauges and controllers. New products include high flow-rate, chemical-resistant dry vacuum pumps for kilo-lab and pilot-scale applications.

Booth Number: 1018

Van London Co.

Van London Co. (VLC) manufactures a variety of electrodes and sensors for pH, conductivity, ORP, oxygen, chlorine, and ion-specific applications. Direct replacements for laboratory or

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field hardware are available for all major brands. VLC specializes in custom sensor design for harsh environments and a sizable inventory of sensors, analyzers, and meters are available to expedite the ordering process.

Booth Number: 517

VICI Valco Instruments Co. Inc.

For 50 years, Valco Instruments Co. Inc. (VICI) has been a leading designer and manufacturer of components for precision analytical, biomedical, and biocompatible instrumentation. Companies under the VICI umbrella serve five continents with a diverse product line that includes liquid and gas valves, sample injectors and selectors, pneumatic and electric actuators, temperature controllers, gas generators, gas purifiers, and GC detectors.

Booth Number: 721

VUV Analytics, Inc.

VUV Analytics manufactures universal vacuum ultraviolet (VUV) spectroscopic detectors that provide a new dimension of chemical analysis accuracy. VUV light creates unique spectral signatures in the gas phase that result in unambiguous compound identification and quantitative analysis across a wide spectrum of complex applications. Unlike legacy GC detectors, VUV detection delivers scalable data analysis automation with reduced analytical error and higher analytical throughput. For more information visit www.vuvanalytics.com or email info@vuvanalytics.com.

Booth Number: 823

VWR International

VWR is headquartered in Radnor, Pennsylvania, is a leading, global, independent provider of products, services and solutions to laboratory and production facilities. VWR enables science for customers in the pharmaceutical, biotechnology, industrial, education, government and healthcare industries. With more than 160 years of experience, VWR has cultivated a value proposition delivering product choice, operational excellence and differentiated services.

Booth Number: 622

Wasson-ECE Instrumentation

Wasson-ECE Instrumentation designs solutions for projects that require analytical accuracy and innovative engineering. We have 30 years of experience customizing Agilent GCs to become guaranteed, turn-key systems. Experienced teams are ready to solve challenges like fluid handling, hazardous areas, analyte extraction, micro-reactors, and more. Wasson-ECE also specializes in laboratory and pilot plant automation with custom automation hardware and software designed to meet specific requirements.

Booth Number: 102

Waters Corporation

Waters Corporation creates business advantages for laboratory-dependent organizations by delivering scientific innovation to enable customers to make significant advancements. Waters helps customers make profound discoveries, optimize laboratory operations, deliver product performance, and ensure regulatory compliance with a connected portfolio of separations and analytical science, laboratory informatics, mass spectrometry, as well as thermal analysis.

Booth Number: 1109

Wilmad-LabGlass

Wilmad-LabGlass is a leading manufacturer of specialty laboratory and analytical chemistry glassware, NMR & EPR consumables & precision bore glass tubing produced under ISO 9001:2008 quality standards. In addition to our 8000+ standard products our highly skilled glass team offers design and fabrication of custom borosilicate glass & quartz products for your applications, OEM manufacturing, as well as glass repair services. Wilmad-LabGlass is located in Vineland, NJ with regional locations TN and IL. www.wilmad-labglass.com. Superior service, support and technical know-how to give you confidence, Wilmad-LabGlass is a SP Industries brand.

Booth Number: 1008

XOS

XOS is a leading manufacturer of application-specific X-ray analyzers, offering elemental analysis solutions that improve public safety and customer efficiency in industries like petroleum, consumer products, and environmental compliance. For petroleum applications, XOS offers portable, lab, and process analyzers with unrivaled precision at the push of a button. XOS also offers analyzers for the detection of toxic elements in consumer products and the environment. XOS's advanced optics and OEM sub-systems can increase precision, speed, and spatial resolution, while decreasing the size, complexity, and cost of the instrument. XOS: better analysis counts.

Booth Number: 1003

XRF Scientific Americas Inc

XRFS manufactures platinum dishes and crucibles for mineral testing laboratories, petrochemical and cement industries, performing high-temperature applications such as fusion, ashing and LOI. XRF Scientific Americas offers the refining services to reclaim the highest return value from used platinum accessories. In conjunction with the platinum labware, XRF manufactures a full range of high-end prefused Li Tetraborate and Li Metaborate granular and micro-bead fluxes with integrated additives, providing a unique and turnkey solution for accurate measurements and quality control. Our Sales Representatives can assist you in three languages. Visit www.xrfscientific.com for more information.

Booth Number: 222

2018 GCC Golf Tournament



Monday, October 15th, 2018

Moody Gardens Golf Club
1700 Sydnor Lane
Galveston, TX 77554
409-683-GOLF (4653)

10:30 AM Lunch & Registration

11:00 PM Shotgun Start

7:00 PM – 10:00 PM – Golf Awards Banquet

Moody Gardens Hotel Poolside
Inclement Weather Moody Ballroom



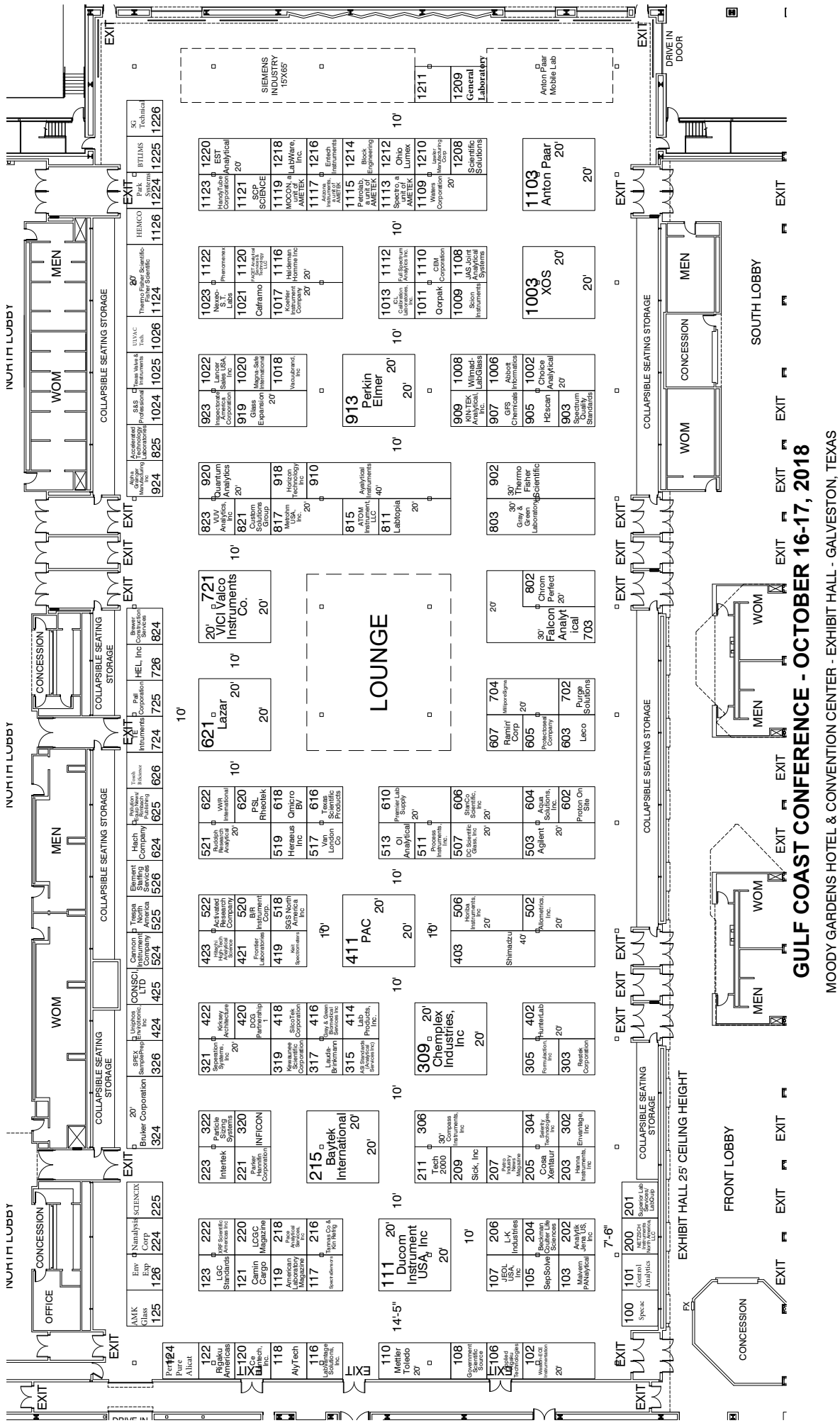
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Account Exec: CINDY AMAYA
Producing Exec: CINDY AMAYA
Started By: LEWIS HEMPILLER
Revision Date: 9/14/2018
Revised By: LEWIS HEMPILLER

Line Item: #4456406
Scale: CUSTOM

GULF COAST CONFERENCE - OCTOBER 16-17, 2018

MOODY GARDENS HOTEL & CONVENTION CENTER - EXHIBIT HALL - GALVESTON, TEXAS

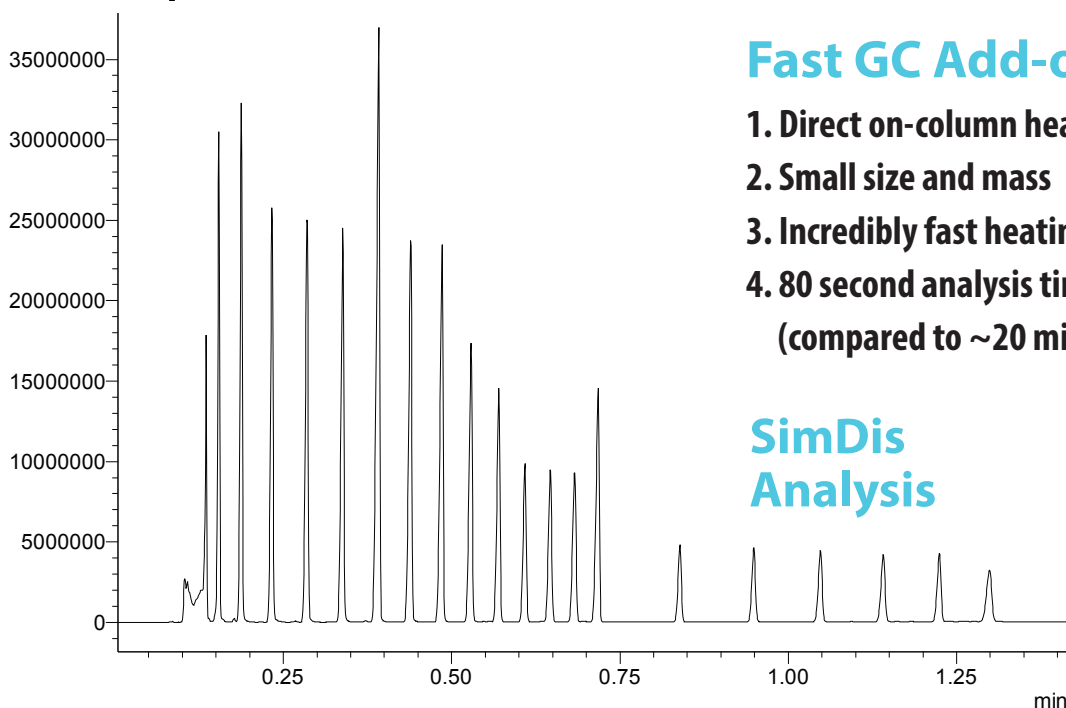
Convert your GC to Fast GC

Fast GC Add-on Module

1. Direct on-column heating
2. Small size and mass
3. Incredibly fast heating and cooling
4. 80 second analysis time
(compared to ~20 min from competitors)

SimDis Analysis

DEMO
Booth 721



No more cold or hot spots. Program all the elements simultaneously.

Easy controls, patented heating sensor elements, and its small size sets the Fast GC SimDis in a league of its own. Four independently rampable temp zones up to 2500°C/min. Available in any phase either as a fused silica, metal or packed column.

Multiple mounting options.

Fast GC product options include:

- Open stock, individual components
- Modular form configuration
- Custom applied instruments



VICI[®] Valco Instruments Co. Inc.

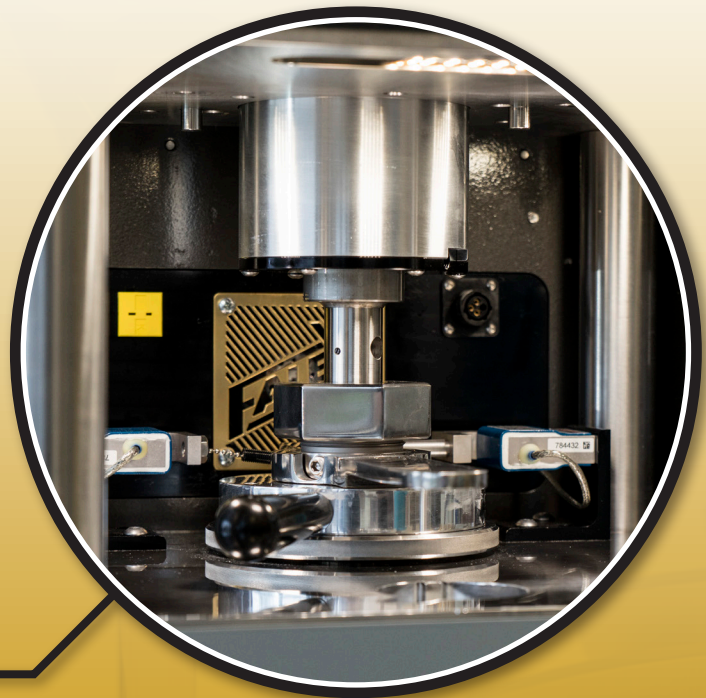
Visit www.vici.com/fast-gc for more information.

FALEX

Introducing The Brand New Four-Ball Tester From Falex

See it in the New Product Showcase or
at Compass Instruments, Booth 306

A new approach to the
time-tested tribology concept
of four-ball testing.



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Falex - 90 years new!

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1020 Airpark Drive
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Vapor Pressure Testing

MINIVAP VP VISION

- For Gasoline, Crude and LPG
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- Monitor through Cockpit™ Software
- 24/7 Access to Multiple Analyzers
- Remote Diagnostics, Help and Troubleshooting



Monitor the Condition of: Lubes, Oils and Greases

MINISCAN IR LOG

- FTIR Analyzer for Lab and Field use
- Less than 1mL Sample per Measurement
- Measures Low or High Levels of Water in Oil
- No Hazardous Chemicals Required



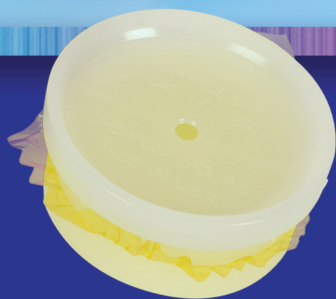
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