



Gulf Coast Conference®

"Serving The World of Chemical Analysis"

Final Program

**Moody Gardens Hotel & Convention Center
Galveston Island, Texas**

October 18th - 20th, 2005

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ISO 14597
ISO 20884

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USA
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Fax: +1 508 647 1115
Toll Free; 1-800-279-7297
info@panalytical.com
www.panalytical.com



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2005 Conference Schedule

Monday October 17, 2005

8:30 AM

Gulf Golf Tournament
Galveston Island Municipal Golf Course

7-10 PM

Gulf Golf Tournament Banquet
Location TBD

Tuesday October 18, 2005

9:00 AM Presenter of The Years Forum

9:00 AM -5:00 PM

Technical Sessions
Exhibits

New Product Showcase - 11:30 AM - 1:00 PM

5:00- 7:00 PM

Gulf Coast Conference Social
Moody Gardens Visitor Center

Wednesday October 19, 2005

8:30 AM - 5:00 PM

Technical Sessions
Poster Sessions
Exhibits

New Product Showcase - 12:30 PM - 2:00 PM

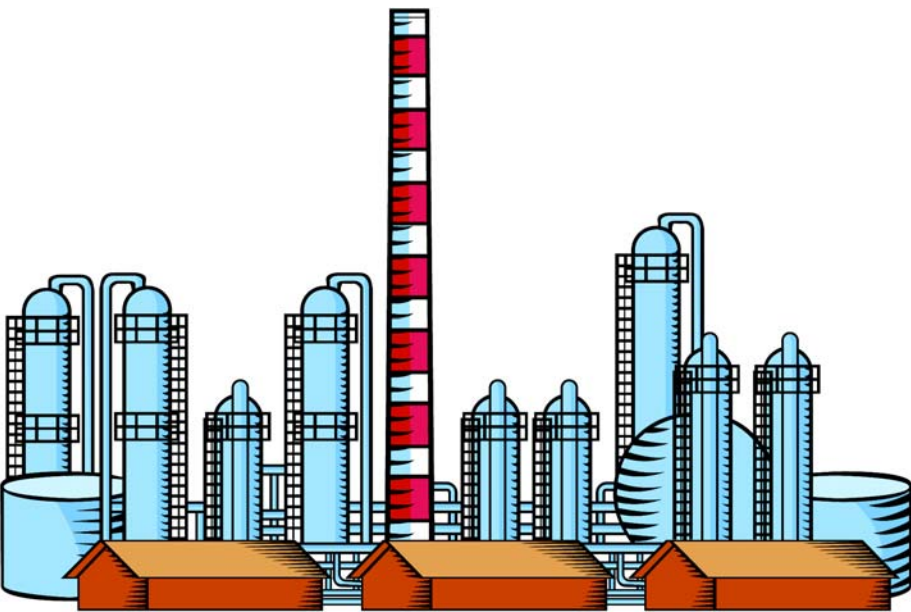
5:00 PM - 6:00 PM

Vendor Meeting
Floral Hall A2

Thursday October 20, 2005

8:30 AM - 1:00 PM

Presentations
Training Courses
Exhibits



Gulf Coast Conference Program

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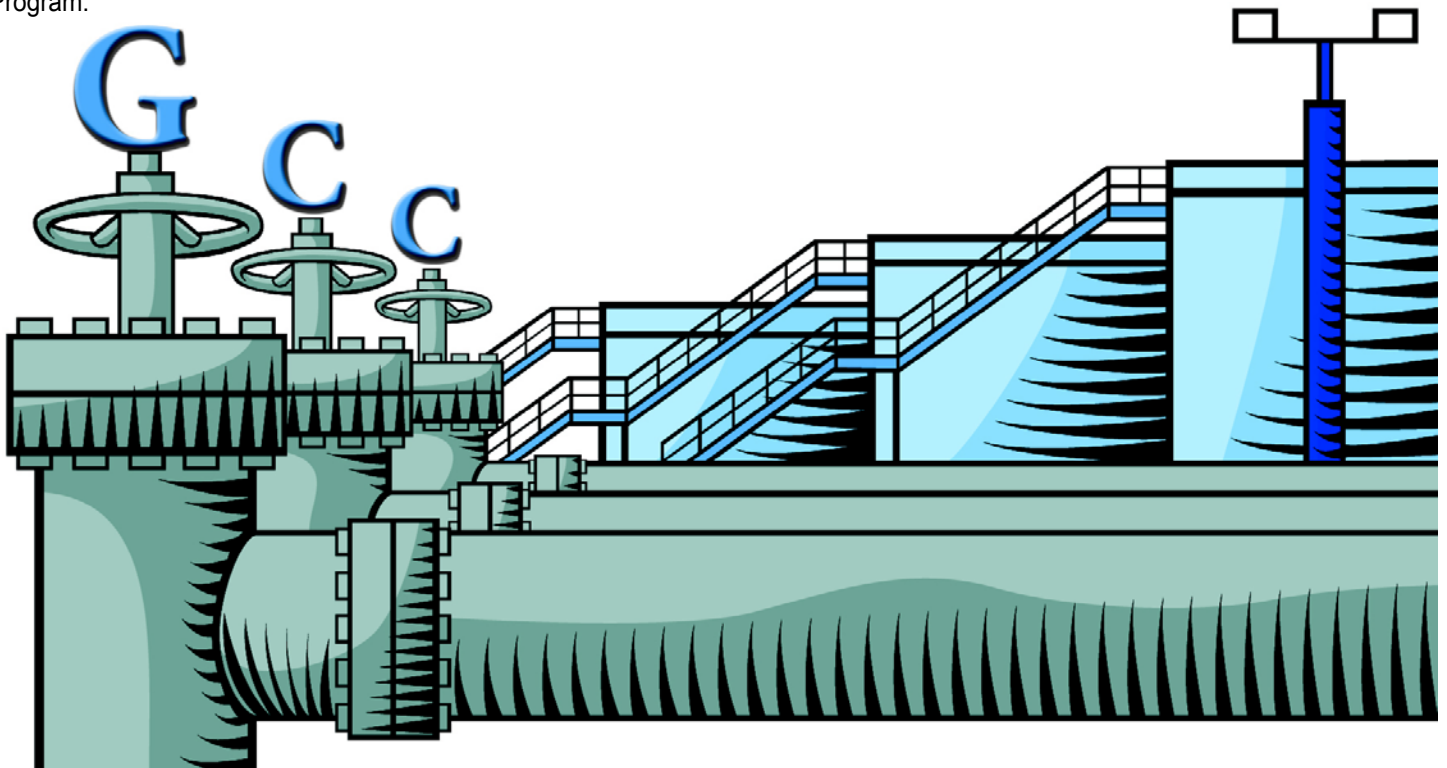
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Submissions for publication are encouraged and should be sent to the Editor at the above addresses. Advertising rates, material requirements, deadlines, etc. should be addressed to the above addresses as well.

POSTMASTER: Send address changes to: **The Gulf Coast Conference Program**, 17515 Spring Cypress - Suite C-116 - Cypress, Texas 77429

Mission Statement

“To provide GCC members 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.





Notes from the rolltop...

For over four generations, this old desk upon which I write, has been a solid piece of oak furniture. It's function has been to help provide a place for organization, a place to work from, a place to sit and develop ideas, record those ideas, and maybe a platform upon which to share those ideas. Solid, sound, and sure - this desk and the Gulf Coast Conference move into a new era with the next 100 meetings of the GCC.

We are most proud of the 2005 GCC Program which you are now reviewing. The technical program is outstanding, and reflects the most current ideas, issues, problems, and solutions that face the chemical analysis industry as it relates to the petrochemical, refining, and environmental worlds. New and innovative methods, techniques, and processes are presented, as well as refinements to older solutions which help resolve persistent issues that may bring fresh approaches to old problems for many of you.

In order to provide a more reasonable technical schedule and allow each of you the opportunity to attend more technical sessions, and still have ample time to visit the sponsoring vendors, the GCC has adapted a different scheduling and abstract acceptance philosophy. Consequently, the 2005 GCC program will be a bit less in quantity but significantly more in quality. We sincerely thank and respect all that submitted their work for presentation at the GCC and are very pleased with the information, ideas, data, and results that are offered in this fine program.

In conjunction with the beginning of our next 100 meetings, we are introducing several new features to the annual meeting which we hope you will find useful and informative. Details of each are described in other sections of this program, but to whet your appetite, here are just a few:

New Product Showcase - This new feature will provide a central location near the meeting rooms for selected vendors to show off and demonstrate their latest and newest advances in products, software, and methods. For 1 1/2 hours each on Tuesday and Wednesday of the meeting, you are asked to stop by this special exhibit area and review what you see. Significant awards will be given to those vendors selected as "Best in Class" and for the reviewers (you) a special Lifetime GCC Conference Registration will be given to one individual randomly chosen from completed review forms (which we are asking that you fill out).

Presenter of the Years Forum - Over the past several years, we have recognized contributors to the GCC program with the annual Presenter of the Year Award. We will do the same again this year, but have planned a new forum for the presentation of the award and also for our attendees to hear directly from many of these technical leaders from our community. We are planning a special Tuesday afternoon session in which many of our past award recipients will provide short discussions regarding current topics and a discussion about future trends with "A Glance at the Future of Chemical Analysis". Don't miss this chance for a perspective and view from some of our most important technical contributors.

SEVEN Training Courses! Looking for training for you or others in your lab? New courses are offered this year in the use of GC, GC/MS, X-Ray Analysis, Titration, and Glassware Use and Safety.

...again this year, we see a significant interest in presenting and attending at the GCC by individuals from around the world. The technical program (to date) already has contributions from the U.S., UK, Germany, Japan, Israel, Italy, Venezuela, and even Iran. Interest in what GCC has to offer is spreading throughout the industries which it serves. Chemical analysis in the petrochemical, refining, and environmental world are not limited to our own backyards!

..Another quick look at our exhibitors list this year yields another very interesting trend...almost 15% of our exhibitors this year are new to the GCC. In fact, many of these are totally new businesses. This again typifies that the GCC helps to provide a forum for new ideas, innovation, and entrepreneurial enterprise. And let's not forget the many vendors that started their efforts at GCC over the last 100 meetings. Many began showing their products and ideas in a 10 minute presentation or in a shared booth with another company. Today they may be among the largest exhibitors with several booths of their own. GCC is proud to have played its small part in contributing to these success stories and salutes those individuals and companies willing to take the risks necessary to achieve their success!

100 meetings was quite a milestone. We hope you will come to Galveston Island to help us celebrate and begin our next 100 meetings. Whether you are a lab tech, chemist, engineer, lab or plant manager, the 100th meeting of the Gulf Coast Conference will be the premier place for education and innovation in your field. Register today with the form found across from this page or on-line at www.gulfcoastconference.com

See you in October!

Bob Kibler
President
Gulf Coast Conference



2005 Registration Form

October 18-20, 2005
Moody Gardens Hotel & Convention Center

Please send the completed form and a check for \$95.00
made payable to [Gulf Coast Conference](#)
or fill out MasterCard/VISA/AMEX/Discover information below & send to:

Gulf Coast Conference
17515 Spring Cypress, Suite C-116
Cypress, Texas 77429
281-256-8807 Voice
281-256-8864 Fax

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- I want to attend Papers and Exhibits (\$95.00)
- I want to see the Exhibits only No Charge (Not available to Exhibitors)
- Check Enclosed with the Application (Registration will only be complete upon receipt of payment)
- Charge to MasterCard/VISA/AMEX/Discover

Cardholder Signature: _____

Card #: _____ Exp. Date: _____

Register Online at www.gulfcoastconference.com

Presenter of the Year Forum

A Glance at the Future of Chemical Analysis

For the last seven years, the GCC has recognized a presenter every year for their cumulative work and contributions to the annual program. This group of individuals represent the technical leadership exhibited by many of our contributors over the years, and also provide a significant source of technical and scientific expertise that has proven to be useful and timely to our attendees and web visitors throughout the year.

For the 2005 GCC, we are beginning a new session to “kick-off” the annual meeting. We have invited all of the past award winners to participate in a roundtable discussion of their views as they consider “A Glance at the Future of Chemical Analysis”. The vision of this group surely will portend trends and directions for our industry and we are sure that this group will provide a great introduction to the annual meeting.



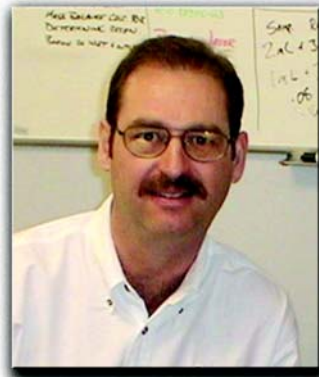
This new session will be held in the Floral Hall A 2 at the Moody Gardens Convention center and will start at 9:00 AM on Tuesday October 18th. Each of our past award winners will have an opportunity to present a “view” of the future, followed by a roundtable discussion and Q&A with the audience. The 2005 Presenter of the Year Awardee will be announced, and members of the press have been invited to participate as well.

2004 Presenter of the Year

Each year, the Gulf Coast Conference recognizes and honors one author for their contributions to the annual program. For 2004, the decision was made to recognize long time author and contributor to the GCC, Dr. Randall Shearer, now of GE Analytical Instruments. For over a decade, Randy has contributed to the GCC on a technical level with vision and outstanding work with detectors for sulfur and nitrogen in chromatographic and other analyzer systems.. His efforts have resulted in the adoption of his techniques and methods all around the world for the important analysis of sulfur in a variety of matrices and with broad concentration ranges.

At the 2004 GCC annual vendors meeting, Randy was recognized for his outstanding contributions to the GCC and for his efforts to contribute to the advancement of the science of chemical analysis. Congratulations and many thanks to Randy and his employer - GE Analytical Instruments (formerly Ionics Instruments) for their continued efforts!

To meet and see the 2005 Presenter of the Year, be sure to attend the Tuesday AM "Presenter of the Year Forum" to be held at 9:00 AM October 18, 2005 in Floral Hall A 2. The announcement of the 2005 Award will be made during this GCC "kickoff" meeting.



2004 Presenter of Year Awardee
Randall Shearer, PhD.
GE Analytical Instruments

Previous Awardees



2002
Laura Chambers
OI Corporation



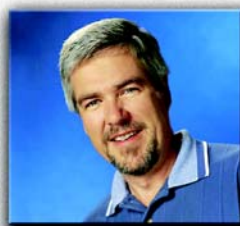
2003
Bill Winniford
The Dow Chemical Co.



2003
Kefu Sun
The Dow Chemical Co.



2000
Dan DiFeo
SGE, Incorporated



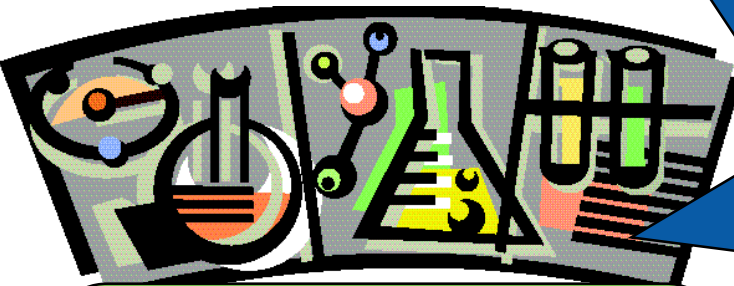
1999
Allen Vickers
Agilent



1998
Jaap de Zeuw
Varian



New Product Showcase



The 2005 Gulf Coast Conference will sponsor a new event to provide a forum for the introduction of new technology and innovation to our attendees. On Tuesday and Wednesday of the meeting from 11:30 AM - 1:00 PM there will be special table top displays with new products and technology for your examination. Several vendors will provide these products and personnel to describe them during these specific times in the lobby area outside the Floral Hall A 2 on the second floor of the Moody Gardens Convention Center.

We are asking all Attendees to stop by and take a look at these products and complete an opinion survey about what you see. One survey will be drawn on Wednesday evening from the completed surveys and that person will receive a LIFETIME registration to the Gulf Coast Conference!

The GCC will appreciate your participation, and we know that the participating vendors will as well!



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Gulf Golf 2005

Corporate Sponsorship Opportunities

• sponsorship reservation & fees due by **October 10, 2005**

\$2,500: Platinum Level

One company will be sponsor of a Hole-In-One Contest. Special recognition will be given at the awards banquet in addition to all of the benefits of a Gold Sponsor, shown below! Only one Platinum Level Sponsorship available.

\$1,000: Gold Level

Your company will sponsor a hole with a longest drive contest or closest-to-the-pin contest. A special sign with your corporate logo will be used in the tee area and at the refreshment center. Gold sponsor plaque will be available for display at the conference and your company will receive special recognition at the tournament awards party. Four golfers play for free (\$340 value). Limited Gold Sponsorships available.

\$500: Silver Level

Your company will sponsor their own hole with a sign indicating sponsorship. Two golfers play for free (\$170 value).

\$200: Bronze Level

Co-sponsor a hole with a sign indicating sponsorship.

Donate player gifts

Contacts for additional information

Registering your team for the tournament:

Anita Metcalf – Gulf Coast Conference
(281) 256-8807

Pledging a corporate sponsorship:

Jim Hepp – Compass Instruments
Bob Stamp - PAC
Golf Co-Chairmen

Who can play? Attendees and exhibitors of the 2005 Gulf Coast Conference are invited to participate. A limited number of slots are available, so sign up now!

- Game format is a four-person "scramble."
- Cost of \$85.00 per person includes green fees and cart, hospitality carts, and a great award party. All participants will receive one free raffle ticket for terrific prizes!
- Prizes will be awarded for Low Team Score, Closest-To-The Pin, Longest Drive. Plus, compete in our Hole-In-One Contest!
- Awards Banquet with indoor reception, open bar and casual buffet sponsored by GCC on Monday evening from 7–10 P.M. Prizes awarded. Winners must be present to receive awards. Banquet held rain or shine!

Sign up today! Reserve your spot now. Simply complete the following registration and return it with payment by **October 14, 2005**. Corporate Sponsorship payment due by **October 10, 2005**.

Team Contact: _____
Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: (_____) _____ Ext: _____ Fax (_____) _____

REGISTRATION/SPONSORSHIP FEES:

Corporate Sponsorship Level:	_____	\$	_____
Player 1:	_____	Handicap:	_____ \$ 85.00
Player 2:	_____	Handicap:	_____ \$ 85.00
Player 3:	_____	Handicap:	_____ \$ 85.00
Player 4:	_____	Handicap:	_____ \$ 85.00

PAYMENT: _____ **A M O U N T D U E:** \$ _____

NO REFUNDS AFTER OCTOBER 1, 2005. REFUNDS CANNOT BE GIVEN FOR RAIN-OUT.

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Signature _____

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Gulf Golf Tournament • 17515 Spring Cypress - Suite C-116 - Cypress, Texas 77429 • or call Anita at 281256-8807 • or register online at:

www.gulfcoastconference.com

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Still Available!

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Another Great
Tournament &
Banquet!**



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2005 CONFERENCE SCHEDULE

Tuesday - October 18, 2005

Floral Hall A 2

"A Glance At The Future Of Chemical Analysis"

Gulf Coast Conference Kickoff Session

Roundtable Discussion and Q & A for Panel Members - Invited Panel Members include all past Presenter of the Year Awardees: Jaap de Zuew, Allen Vickers, Dan DiFeo, Laura Chambers, Kefu Sun, Bill Winniford, and Randy Shearer

Discussion Forum - 9:00 AM - 90 minutes

"ABB Inc. Analytical - Workshop"

Workshop Schedule -

- 1:30 PM **"The Industrial Mass Spectrometer Solution for Natural Gas Processing Plants"**
Sudhir Kulkarni, PhD Zbigniew Krieger, PhD - ABB Inc. Analytical
Abstract # 025
- 2:00 PM **"Dynamic Reflux Sampling for Challenging Process Sample Locations"**
Tracy Dye - ABB Inc. Analytical
Abstract # 067
- 2:30 PM **"ASTM D3710 in Less Than 4 Minutes -- The Fast GC (PGC2009)"**
Steve Bostic, Ken Melda - ABB Inc. Analytical
Abstract # 062
- 3:00 PM **"ABB and Agilent -- Two Companies Synonymous with GC"**
Steve Bostic Jerry M. Clemons, PhD. - ABB Inc. Analytical
Abstract # 049
- 3:30 PM **"Chromatography Has Never Been More Simple, More Reliable and More Flexible"**
Steve Bostic, Tracy Dye, Kenneth Melda - ABB Inc. Analytical
Abstract # 050
- 4:00 PM Hospitality Event Sponsored by ABB Inc. Analytical

Bluebonnet/Orchid

Special Seminar - Ionic Liquids

- 10:30 AM **"New Functionalised Ionic Liquids And Their Commercial Availability From Merck KGaA/EMD"**
Urs Welz-Biermann - Merck KGaA
Abstract # 045
- 11:15 AM **"Task-specific Ionic Liquids (TSIL): Novel New Materials For Petrochemically Relevent Catalysis And Separations"**
James H. Davis, Jr.; Robin D. Rogers; Morgan D. Tickell; Scott Griffin; Ashley Smith - Univ. of South Alabama, Department of Chemistry
Abstract # 046

Lunch & Exhibit Hall Break 12:00 Noon - 2:00 PM

GC Sampling Technology

- 2:00 PM **"Applications of PTV Injection for Problem Solving in the Petrochemical Industry: Thermal Desorption with GC-MS"**
Rachel Kohn, Ph.D. and Robert Sandor Ph.D. - Optichem LLC
Abstract # 026
- 2:30 PM **"Automated Analysis of Trace Organics in Water by On-line SPE-PTV-GCMS"**
Robert Sandor Ph.D. and Rachel Kohn, Ph.D. - Optichem LLC
Abstract # 027
- 3:00 PM **"Gas Chromatographic Techniques for the Rapid Analysis of Used Engine Oil"**
Andrew Tipler, Timothy D. Ruppel, Gerald Hall and David Hilligoss - PerkinElmer Life and Analytical Sciences
Abstract # 105
- 3:30 PM **"Novel Technology to Enhance the Performance and Reliability of Thermal Desorption - Gas Chromatographic Analyses"**
Andrew Tipler - PerkinElmer Life and Analytical Sciences
Abstract # 106
- 4:00 PM **"Novel Injection Technique For The Quantitative Analysis Of Viscous Liquids And Solids"**
Bob Freeman and Terry Wilks - Quantum Analytics
Abstract # 082

Hibiscus/Daffodil

Karl Fisher Presentations

- 1:00 PM **"An Innovative New Water Standard for Karl Fischer Analysis of Petroleum Products"**
Michael Stern, Larry Girdler - EMD Chemicals, Inc.
Abstract # 002 - 30 minutes
- 1:30 PM **"Elimination of False Low Water Results through Karl Fischer Titrant Stabilization"**
Larry Girdler, Michael Stern, David Sharp - EMD Chemicals, Inc.
Abstract # 007 - 30 minutes
- 2:00 PM **"Karl Fischer Reagent and Instrument Selection for Successful Analysis of Crude Oil and Petroleum Products"**
Michael Stern, David Sharp - EMD Chemicals, Inc.
Abstract # 013 - 60 minutes
- 3:00 PM **"Explore the Wealth of Karl Fischer Knowledge Available at the Click of your Mouse"**
Doug Clark - Sigma-Aldrich Corporation
Abstract # 007 - 30 minutes

Iris

New GC, Column, and Detector Technology & Analysis Session

- 2:00 PM **"High Speed Refinery Gas Analysis"**
Richard Addonizio, Christopher Rust, Edward J. Zachowski - Alpha Omega Technologies, Inc.
Abstract # 084 - 30 minutes
- 2:30 PM **"A Simple GC Method for the Methanol Measurement"**
Jay K. Kim, Arden R. Strycker - Northrop Grumman
Abstract # 048 - 20 minutes
- 3:00 PM **"New Capillary Columns for Fast Trans and Omega 3 & 6 Fame Analyses"**
L.M. Sidisky, K.K. Stenerson, G.A. Baney - Supelco
Abstract # 086 - 30 minutes
- 3:30 PM **"A New Type of GC-MS with Advanced Capabilities for Petrochemical and Other Analyses"**
Aviv Amirav, Alexander B. Fialkov, Urs Steiner and Larry Jones - Tel Aviv University and Varian Inc.
Abstract # 023 - 30 minutes

Jasmine

- 2:30 PM **"A Rapid Technique for the Extraction of Persistent Organic Pollutants (POPs) Using Accelerated Solvent Extraction (ASE)"**
Lisa Lenahan, Sheldon Henderson, Eric Francis, Jennifer Peterson and Bruce Richter - Dionex Corporation
Abstract # 047 - 30 minutes
- 3:00 PM **"Automating BOD Analysis"**
Chris Smith and Chris Rodriguez - Man-Tech Associates Inc.
Abstract # 029 - 30 minutes
- 3:30 PM **"Parallel Chamber Configuration for High throughput TOC Analysis"**
Gary Erickson - OI Analytical
Abstract # 111 - 30 minutes
- 4:00 PM **"Improved TOC Analysis for Salt Water and Brine"**
Gary Erickson - OI Analytical
Abstract # 110 - 30 minutes

Wednesday - October 19, 2005

Bluebonnet/Orchid

Symposia on Comprehensive Two-Dimensional GC

Session Chaired by: Kefu Sun and Bill Winniford - The Dow Chemical Company

- 9:30 AM **"GC x GC: How it Works; Why We Need It"**
Edward B. Ledford, Jr. - Zoex Corporation
Abstract # 072 - 30 minutes
- 10:00 AM **"Multiple ASTM Methods with a Single GC x GC Instrument"**
Edward B. Ledford, Jr. - Zoex Corporation
Abstract # 074 - 30 minutes
- 10:30 AM **"Automatic Colorization for Images from Comprehensive Two-dimensional Gas Chromatography"**
Arvind Visvanathan and Stephen E. Reichenbach - University of Nebraska Lincoln
Abstract # 063 - 20 minutes
- 10:50 AM **"Peak Template Matching with Constraint Expressions for GCxGC"**
Qingping Tao and Stephen E. Reichenbach
Abstract # 066 - 20 minutes
- 11:10 AM **"Wrap-Around in GCxGC - Issue and Solutions"**
Kefu Sun, Dave McCrery and Bill Winniford - The Dow Chemical Company, Texas, USA
Abstract # 108 - 30 minutes

Lunch & Exhibit Hall Break

- 1:00 PM **"Application of Comprehensive Two-Dimensional Gas Chromatography to the Hydrocarbon Type Analysis (PNA) of Middle Distillates"**
Andrea Cadoppi, Daniela Cavagnino, Giacinto Zilioli - Thermo Electron
Abstract # 081 - 30 minutes
- 1:30 PM **"UltraFast GC Method for the Analysis of Total Petroleum Hydrocarbons in Water and Soils, in Compliance with Texas TNRCC 1005"**
Andrea Cadoppi, Daniela Cavagnino, Riccardo Facchetti, Stefano Pelagatti - Thermo Electron
Abstract # 088 - 20 minutes
- 1:50 PM **"A Concept of Ultra Fast GC Separation"**
Bill Winniford, Kefu Sun, Dave McCrery, James Griffith & Jim Luong - The Dow Chemical Company, Texas, USA
Abstract # 107 - 30 minutes
- 2:20 PM **"Use of Fast Low Thermal Mass GC for Comprehensive Two-Dimensional Separation"**
James Griffith, Kefu Sun, Bill Winniford and Jim Luong - The Dow Chemical Company, Texas, USA
Abstract # 109 - 30 minutes
- 3:00 PM **"Enhancing the Power of the GCxGC-TOFMS Analysis through Data Processing Using Classifications and Scripting Software"**
Tincuta Veriotti, Don Hilton - LECO Corporation
Abstract # 083 - 30 minutes
- 3:30 PM **"The Separation of C2-Naphthalenes by Gas Chromatography x Fourier Transform Infrared Spectroscopy (GCxFTIR): A Two-Dimensional Separation Approach"**
Frank Cheng-Yu Wang, Kathleen E. Edwards - ExxonMobil Research and Engineering Company*
Abstract # 101 - 30 minutes

SULFUR WARS

- 8:30 AM **"Impact of Sampling and Transfer Component Surface Characteristics on the Analysis of Sulfur and Mercury Containing Streams"**
Gary A. Barone; David A. Smith; Marty E. Higgins - Restek Corporation
Abstract # 010 - 20 minutes
- 8:50 AM **"A New Bench-Top WDXRF System For Sulfur Analysis"**
Makoto Doi, Kohei Kansai, Hisashi Inoue, Takashi Yamada, Hisayuki Kohno and Al Martin - RIGAKU Industrial Corporation
Abstract # 064 - 20 minutes
- 9:10 AM **"Recent Developments In Sulfur Measurements Of ULSD Samples"**
Michael C. Pohl, David Malone - Horiba Instruments, Inc.
Abstract # 036 - 30 minutes
- 9:40 AM **"Recent Advancements in Total Sulfur Analysis by Excimer UV Fluorescence Detection"**
Franek Olstowski - ATOM Instrument Corp.
Abstract # 035 - 20 minutes
- 10:00 AM **"Analysis of Sulfur in Ethanol by Potentiometric Titration"**
Tore Fossum - Mettler Toledo, Inc.
Abstract # 096 - 20 minutes
- 10:20 AM **"The Detection of Low-level Sulfur Compounds with a SCD and an ASD"**
Malik Haouchine, Bruce Talbert, Amandine Gautier, Tracey Jacksier - Air Liquide
Abstract # 116 - 30 minutes
- 10:50 AM **"Simultaneous Speciation Of Sulfur Compounds By Families And Simulated Distillation Analysis Utilizing Dual Plasma Chemiluminescence And Flame Ionization Ddetectors"**
Joaquin A Lubkowitz, Ph.D, Juan Carlos Moreno, Steve P. Elliot, Separation Systems, Gulf Breeze, Florida Randy L. Shearer, GE Analytical Instruments Inc.
Abstract # 080 - 20 minutes
- 11:10 AM **"Improved Analysis of Sulfur Compounds in Gasoline and Diesel Matrices Using the Pulsed Flame Photometric Detector (PFPD)"**
Laura Chambers, Michael L. Duffy - OI Analytical
Abstract # 011 - 20 minutes
- 11:30 AM **"Sulfur GC Applications using the SCD/FID Adapter"**
R. L. Shearer - GE Analytical Instruments
Abstract # 100 - 30 minutes
- 12:00 PM **"GC-SCD Sulfur Analysis of Refined Petroleum Products with Wide Boiling Ranges"**
Colin Beswick and James Fu - Engelhard Corporation
Abstract # 120 - 30 minutes

Lunch & Exhibit Hall Break

Process Applications

- 1:00 PM **"Use of a Multi-Component Photometer for Process Safety and Quality Control"**
Bill Worthington, Joern Baasner - Sick Maihak
Abstract # 119 - 30 minutes
- 1:30 PM **"Using Fast GC To Sense Process Upsets"**
John Crandall (ASI), Edward Overton (Louisiana State University), Ned Roques (ASI), and Brian Rohrback (Infometrix, Inc.)
Abstract # 043 Paper - 30 minutes
- 2:00 PM **"RFID Technology for the Laboratory and Advanced Process Control"**
Jonathan Richter - Baytek International
Abstract # 054 - 30 minutes
- 2:30 PM **"Energy Saving Methodology For Crude Oil Distillation System"**
Vikas Rastogi, Dr. Megan Jobson, and Prof. Robin Smith - Centre for Process Integration
Abstract # 051 - 30 minutes

- 3:00 PM **"Real-Time and In-Process Monitoring and Control of Petroleum Processes"**
Eric J. Hukkanen, Ph.D. - Mettler Toledo AutoChem, Inc.
 Abstract # 053 - 30 minutes
- 3:30 PM **"Advancements in the Use of Tunable Diode Laser Analyzers for On-Line Process Measurements"**
Al Kania, Sam Miller - SpectraSensors
 Abstract # 069 - 30 minutes
- 4:00 PM **"Analysis of Acrylonitrile by FTMS"**
Wayne Rimkus, Dean Davis, Ken Gallaher, Dan Phelps - Siemens Applied Automation
 Abstract # 118 - 20 minutes

Hibiscus/Daffodil

Ion Chromatography User Group

- 9:30 AM **"GCC 2005 Ion Analysis Discussion Group"**
Kirk Chassaniol - Dionex
 Abstract # 087 - 2 hours

Lunch & Exhibit Hall Break

- 1:00 PM **"Rapid Optimization Of Gradient IC Separations Through Predictive Modeling"**
Lisa Lenehan, John Madden, Jim Schibler - Dionex Corporation
 Abstract # 052 - 30 minutes
- 1:30 PM **"Acclaim Columns: A Simple Solution to Difficult Separations"**
Matthew Neely, Xiaodong Liu, and Christopher Pohl - Dionex Corporation
 Abstract # 056 - 30 minutes
- 2:00 PM **"Chromeleon Software Development Kit (SDK) Can Enhance Screen Views and Third Party Software Interface Capabilities"**
Larry G. West - Dionex Corporation
 Abstract # 065 - 30 minutes
- 2:30 PM **"Software-controlled Elimination of Retention Time Drift"**
Brian Rohrback, Infometrix, Inc. and Don Crider, AC Analytical Controls
 Abstract # 037 - 30 minutes
- 3:00 PM **"Effective Use of Software for Processing Fast GC Data"**
Brian Rohrback (Infometrix), Scott Ramos (Infometrix), Ned Roques (Analytical Specialists, Inc.), Frank Tontala (Scientific Software, Inc.) and John Crandall (Analytical Specialists, Inc.)
 Abstract # 042 - 30 minutes
- 3:30 PM **"Finally, something useful from the IT department"**
Brian Rohrback, Shelley Begley and Phil Bartley - Infometrix, Inc. and Agilent Technologies, Inc.
 Abstract # 071 - 30 minutes
- 4:00 PM **"Take Your Knowledge Off The Lab Bookshelf - Waters Electronic Laboratory Notebook Software"**
Brian Morrisroe - Waters Corporation
 Abstract # 085 - 30 minutes

Iris

- 10:00 AM **"Low-level NOx and NH3 Standards: Analysis and Stability"**
Malik Haouchine, Bruce Talbert, Tracey Jacksier - Air Liquide
 Abstract # 114 - 30 minutes
- 10:30 AM **"DCG: Setting the Standard in Standards"**
Ashley Wolfe - DCG Partnership 1, Ltd.
 Abstract # 104 - 20 minutes

Lunch & Exhibit Hall Break

- 1:00 PM **"Waters GPC2000 Triple Detection With Single Software Control"**
Alice Di Gioia Jinchuan Yang - Waters Corporation
 Abstract # 061 - 30 minutes

- 1:30 PM **"Ultra Performance Liquid Chromatography™ : An Introduction and Review"**
Larry Meeker, Jeremy Harbin, Thomas Hubbell - Waters Corporation
 Abstract # 091 - 30 minutes
- 2:00 PM **"Salt Effects upon the Electronic Absorption Spectra of Indicator Dyes"**
Cyril Parkanyi, Zuzana Zajickova, Willem H. Mulder, and Jean-Jacques Aaron - Florida Atlantic University
 Abstract # 041 - 30 minutes
- 2:30 PM **"Electrical and Mechanical Properties Of Conductive Carbon Black/ Polyolefin Composites Mixed With Carbon Fiber"**
A.Farshid Far, V.Haddadi asl, H.Nazokdast - SAPCO
 Abstract # 005 - 45 minutes
- 3:15 PM **"Single Position Double Block-and-Bleed Valve Simplifies NeSSI-based Multiple Stream Sampling Systems"**
David M. Simko and John J. Wawrowski - Swagelok Company
 Abstract # 113 - 30 minutes
- 4:15 PM **"Rheology, Mechanical and Thermal Properties of Nanocomposite SBR Prepared from Latex: Effects of Clay Content and Processing Factors"**
N.Noroozi, A.A.Katbab and F. Goharpey - Amir Kabir University of Technology
 Abstract # 121 - 20 minutes

Jasmine

- 9:30 AM **"PETRO-QUANT - Optimised Performance With WDXRF In Petrochemistry"**
Bob Burton, Kai Behrens, Arnd Buhler - Bruker AXS
 Abstract # 115 - 20 minutes
- 10:00 AM **"The Determination Of Mercury At Or Below The Part Per Trillion Level: Methods, Requirements And Best Practices"**
David Pfeil, Dr. Peter Brown, Bruce MacAllister, Craig Seeley - Teledyne Leeman Labs
 Abstract # 038 - 30 minutes
- 10:30 AM **"Novel Approach for Analysis of Chloride, Thiosulfate, Thiocyanate and other anions in Presence of High Sulfide (H₂S) Content"**
Jay Gandhi - Metrohm-Peak Inc.
 Abstract # 031 - 30 minutes
- 11:00 AM **"Automated Measurement of Base Number by Potentiometric Titration ASTM D2896"**
Tiffany Reid, Christopher Smith, Christopher Rodriguez - Man-Tech Associates, Inc.
 Abstract # 028 - 30 minutes

Thursday - October 20, 2005

Bluebonnet/Orchid

- 9:00 AM **"PANalytical X-Ray Diffraction Training"**
 Abstract # 033 Paper - 2 hours
- 11:00 AM **"PANalytical's Wavelength Dispersive XRF Training"**
 Abstract # 034 - 4 hours
- 3:00 PM **"PANalytical's Energy Dispersive Training Course"**
 Abstract # 040 - 2 hours

Hibiscus/Daffodil

- 9:00 AM **"Glassware Safety and Handling"**
Randall C. Wade and Jim Ramin' - Ramin' Corporation
 Abstract # 112 - 90 minutes

Iris

- 9:00 AM **"Optimizing Titrations in the Petrochemical Laboratory"**
Tore Fossum - MettlerToledo
 Abstract # 097 - 2 hours

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Poster Sessions

Wednesday October 19, 2005
Moody Gardens Convention Center

Authors of the below poster presentations have been asked to attend their poster(s) at the specified times below to discuss their work and answer any questions by attendees.

Abstract # 001 - 9:15 AM

“A Novel Technique for Measuring Water in Aldehydes and Ketones by Karl Fischer Titration”

John D. MacFarlane, Kazuhiko Okusa - JM Science, Inc.

Abstract # 003 - 9:15 AM

“Changes to the Standard PFPD Sulfur Configuration To Reduce Hydrocarbon Quenching in Gasoline Samples”

Laura Chambers, Michael L. Duffy - OI Analytical

Abstract # 004 - 9:30 AM

“Developments in Purge-and-Trap Automation”

Laura Chambers, Michael L. Duffy - OI Analytical

Abstract # 006 - 9:00 AM

“Elimination of Contaminating Leaks at Interfaces in GC and GC/MS Systems”

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE

Abstract # 008 - 9:30 AM

“Elucidation Of Gas Chromatographic Sample Introduction Processes”

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE Incorporated

Abstract # 009 - 9:00 AM

“Evaluation of Alloys and Coatings in Corrosive Environments”

Gary Barone; Marty Higgins; David Smith - Restek Corporation

Abstract # 012 - 9:45 AM

“Increasing The Level Of Testing Standards For Capillary Columns”

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE Incorporated

Abstract # 014 -10:00 AM

“Myths of Capillary Gas Chromatography: Aqueous Samples”

Dan DiFeo, Peter Dawes, Ruby Ong, Paul Wynne - SGE Incorporated

Abstract # 016 - 9:00 AM

“New Developments in UV-VIS Spectrophotometer Analytical Instrumentation and Software”

Donald Harrington - Hach Company

Abstract # 018 -10:30 AM

“Quantitative Evaluation Of Gas Chromatographic Capillary Column Bleed”

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE Incorporated

Abstract # 020 - 9:30 AM

“Contrasting Methods for the Measurement of Dissolved Oxygen: A Case for Luminescent Dissolved Oxygen Sensors”

Donald Harrington - Hach Company

Abstract # 021 - 9:00 AM

“New Total Organic Carbon (TOC) Analyzer Has Been Developed Providing Enhanced Long-term Stability, Greater Accuracy and Greater Range for Analysis of Water, Waste Water and Soil.”

Donald Harrington - Hach Company

Abstract # 024 - 2:30 PM

“ASTM D6584 Supelco pre-Mixed Glycerin in Biodiesel Standards”

Kathy H. Kiefer James H. Walbridge Steven P. Cecil - Supelco

Abstract # 030 - 10:30 AM

“Improved Confidence Level in Sample Identification with the Supersonic GC-MS”

Aviv Amirav, Alexander Gordin, Alexander B. Fialkov and Tal Alon - Tel Aviv University

Abstract # 039 –11:00 AM

“Ultra High Throughput Microwave Assisted Evaporations and Concentrations”

Maxsell Dickey - CEM Corporation

Abstract # 044 – 10:30 AM

“High Speed PONA Analysis For Detailed Hydrocarbon Analysis Extended (DHAX) Using Hydrogen Carrier Gas For The Determination of Individual Components In Spark Ignition Fuels”

Barry L. Burger, Neil Johansen Valerie Gamble Donald Rhoades - Restek Corporation

Abstract # 055 – 3:00 PM

“Surfactant Analysis by Evaporative Light Scattering Detector: the Instrument Conditions”

Jinchuan Yang, Alice Di Gioia - Waters Corporation

Abstract # 057 – 9:00 AM

“Strategies for Increasing Sample Throughput in High Performance Liquid Chromatography”

Matthew Neely, Giovanni. Maio, and Frank Arnold - Dionex Corporation

Abstract # 058 – 10:00 AM

“A Valveless Sample Handling System for a High Temperature Combustion TOC Analyzer”

Brian Wallace, Steve Proffitt - Teledyne Tekmar

Abstract # 059 – 10:30 AM

“Analytical Steps to Comply with the USEPA’s New 415.3 Method for Total Organic Carbon (TOC) Analysis”

Brian Wallace, Steve Proffitt - Teledyne Tekmar

Abstract # 060 – 11:00 AM

“The Benefits of Total Nitrogen Monitoring for Manufacturing Wastewater Quality”

Brian Wallace, Steve Proffitt - Teledyne Tekmar

Abstract # 068 – 2:00 PM

“Calibration, Validation and Control of the Karl Fischer Analysis, Water Standard selection”

Doug Clark - Sigma-Aldrich Corporation

Abstract # 073 – 1:30 PM

“Improved Safety and Performance of the Volumetric Karl Fischer Analysis of Aldehydes and Ketones”

Doug Clark - Sigma-Aldrich Corporation

Abstract # 075 – 1:30 PM

“New Method for Fuel Oxygenates by Headspace Sampling”

Brian Bertsch, Tom Szakas - Teledyne Tekmar

Abstract # 076 – 2:30 PM

“Static and Dynamic Headspace Analysis for Volatile Organic Compounds”

Brian Bertsch, Tom Szakas - Teledyne Tekmar

Abstract # 077 – 2:00 PM

“Using Purge & Trap with GCMS for MTBE Investigation in Water”

Brian Bertsch, Tom Szakas - Teledyne Tekmar

Abstract # 078 – 10:30 AM

“Determination of Total Cyanide Without Distillation”

William Lipps - O.I Analytical

Abstract # 089 – 10:00 AM

“Volatile Petroleum Hydrocarbons by Purge and Trap”

Laura Chambers, Michael L. Duffy - OI Analytical

Abstract # 090 – 2:30 PM

“The Use of Tandem Quadrupole GC/MS/MS for the Selective Identification of Sterane Biomarkers in Crude Oils as Age and Facie Diagnostic Indicators”

Thomas Hubbell, David Douce, Tim Jenkins, Stephanie N. Dudd, Hans Peter Nytoft, Peter Abolins and Awang Sapawi Awang Jamil - Waters Corporation

Abstract # 092 – 3:30 PM

“Development of a New Low Bleed Column for GC/MS Analysis”

L. Sidisky, Y. Ni, G. Baney, K. Stenerson - Supelco

Abstract # 093 – 3:00 PM

“Increased Performance of Glass Thermal Desorption Tubes Using a Glass-sintered Frit”

Jamie L. Brown, Leonard M. Sidisky, J. Mark Sinclair - Supelco

Abstract # 094 – 4:00 PM

“Low Background and Low Pressure Drop DNPH Cartridges for Trace Level Sampling of Carbonyl Compounds”

J.L.Desorcie, L.M.Sidisky, K. Schultz, M.V. Robillard - Supelco

Abstract # 095 – 1:30 PM

“New Method of The Analysis of Water Samples for Gasoline Contamination”

S. J. Harrison and P. Smith - Leap Technologies

Abstract # 098 – 3:30 PM

“Rapid and Automated Identification of Components in Petroleum Based Samples”

Scott J Campbell - SpectralWorks Ltd

Abstract # 099 – 2:30 PM

“A Novel Differential Mobility Type Detector for the Analysis of Trace Level Sulfur Compounds in Hydrocarbon Matrices”

Bob Belair; Paul van den Engel - Varian, Inc.

Abstract # 102 – 11:00 AM

“Analysis of Complex Mixtures by Fast GC-TOFMS using Low Thermal Mass Technology”

Mark Libardoni - LECO Corporation

Abstract # 103 – 2:00 PM

“A New Approach for Hydrocarbon Group Type Analysis (ASTM 6839) Using Multi-dimensional Gas Chromatography”

Bob Belair, Hans van den Heuvel, Paul van den Engel - Varian, Inc

Abstract # 117 - 11:00 AM

“A Tale as Old as Time & Does the On-line Instrument get the same as the Lab? A Comparison of a UVF On-line Sulfur Analyzer and a UVF Bench Top Sulfur Analyzer”

Roy G. Rodriguez, Lisa J. Nash, Rick Trevino - PAC, L.P.

Training Courses

By the mission statement and charter of the Gulf Coast Conference, we are committed to providing opportunities for training in the sciences of chemical analysis. This year, we are providing a new format to better address this commitment. First of all, we have set aside Thursday of the conference as a focused training day. Registration and attendance at the training courses themselves will serve as your conference registration.

Additionally, we are working on administering CEU's through a local university for those in attendance at the "certified" courses. Check in at the conference to see if your course has been approved for credit.

The seven courses offered this year are listed below and we have provided agendas for some of the courses for your review. Contact the appropriate listed person or website to answer further questions you may have, or to sign up for the courses.

Wednesday - October 19, 2005

Vine I & II - Moody Gardens Hotel

8:30 AM **"Comprehensive Gas Chromatography Training Course"**

Abstract # 122 - 7 hours

Register on line at:

http://www.restek.com/info_seminar/seminar.asp?

Agenda: *Introduction to Gas Chromatography*

- Definitions, History and Uses of GC
- GC Components and Types of Columns
- Factors Affecting Chromatographic Separation
- Basic Terminology and Theory
- Factors Affecting Separation*
- Non-Column Related Factors
- Column Related Factors
- Other Considerations
- Sample Introduction*
- Gas Delivery
- Gas Control
- Liquid Injection Techniques
- Other Sample Introduction Techniques
- Injector Maintenance
- Detection Systems*
- Basic Terminology and Theory
- Flame Ionization Detectors
- Electron Capture Detectors
- Mass Spectrometry Detector
- Quantification
- Maintenance & Troubleshooting*
- Column Installation & Maintenance
- Routine GC Maintenance
- Troubleshooting

Thursday - October 20, 2005

Bluebonnet/Orchid

9:00 AM **"PANalytical X-Ray Diffraction Training"**
Abstract # 033 Paper - 2 hours

11:00 AM **"PANalytical's Wavelength Dispersive XRF Training"**
Abstract # 034 - 4 hours

3:00 PM **"PANalytical's Energy Dispersive Training Course"**

Abstract # 040 - 2 hours

Thursday - October 20, 2005

Vine I & II - Moody Gardens Hotel

8:30 AM **"GC/MS Training Course"**

Abstract # 123 - 7 hours

Register on line at:

http://www.restek.com/info_seminar/seminar.asp?

Agenda: *Introduction to GC/MS*

- Definitions
- Column Types
- Separation Considerations
- Mass Spectrometric Detectors*
- Background
- Instruments
- Inlets and Injection Techniques*
- Liquid Injection Techniques
- Other Techniques
- Column Selection*
- Factors Influencing the Separation
 - Column Related Factors
 - Non-column Related Factors
- Basic Spectral Interpretation*
- Isotopic Abundances
- Common Fragments
- Example Spectra
- Installation, Maintenance & Troubleshooting*
- Routine Maintenance
- Troubleshooting

Hibiscus/Daffodil

9:00 AM **"Glassware Safety and Handling"**
Randall C. Wade and Jim Ramin' - Ramin' Corporation
Abstract # 112 - 90 minutes
For Advance Registration - Contact Randall at: randall@ramincorporation.com

Iris

9:00 AM **"Optimizing Titrations in the Petrochemical Laboratory"**
Tore Fossum - MettlerToledo
Abstract # 097 - 2 hours
For Advance Registration - Contact Tore at: tore.fossum@mt.com

ABSTRACTS 2005

Abstract # 001 - 9:15 AM - Exhibit Hall - Poster Presentation - Wednesday
"A Novel Technique for Measuring Water in Aldehydes and Ketones by Karl Fischer Titration"

John D. MacFarlane, Kazuhiko Okusa - JM Science, Inc.

The determination of water in aldehydes and ketones is problematic in that both classes of compounds interfere with the normal Karl Fischer titration because they react with methanol to form water which is also titrated. Thus, reported results are too high. Reagent manufacturers have sought to replace methanol in their classic Karl Fischer formulations but these specially developed reagents for coulometric and volumetric determinations are rather expensive. In this report, we describe a novel technique that employs an automated azeotropic distillation method and a new, automated liquid evaporator. Results will be presented to show that, with the use of the new evaporator, the difficulties involved in measuring water in the presence of interfering compounds can be solved without using special and costly Karl Fischer reagents. Several applications will show the method to be simple, accurate, and robust.

Abstract # 002 - 1:00 PM - 30 min - Hibiscus/Daffodil - Tuesday
"An Innovative New Water Standard for Karl Fischer Analysis of Petroleum Products"

Michael Stern, Larry Girdler - EMD Chemicals, Inc.

Most Karl Fischer (KF) standards that are used for instrument validation and control in direct titration of petroleum products are based on organic solvents, such as xylene. Therefore, the dissolution characteristics of such standards in typical KF solvents used in direct titration differ substantially from the dissolution characteristics of the petroleum product samples. Additionally, typical low-moisture KF standards are available in the 100ppm to 1000ppm range, whereas the water content of petroleum product samples may be considerably lower. The purpose of this paper is to highlight and introduce an entirely novel NIST-traceable KF water standard, developed specifically for the petrochemical industry, that is both based on a transformer oil matrix, and is lower in its certified water content than most KF standards commercially available today.

Abstract # 003 - 9:15 AM - Exhibit Hall - Poster Presentation - Wednesday
"Changes to the Standard PFPD Sulfur Configuration To Reduce Hydrocarbon Quenching in Gasoline Samples"

Laura Chambers, Michael L. Duffy - OI Analytical

The Pulsed Flame Photometric Detector (PFPD) has become a preferred GC detector for the detection and quantitation of sulfur compounds in matrices ranging from foods, flavors, and fragrances to petroleum products and fine chemicals. The standard PFPD configuration for sulfur analysis uses a 2-mm quartz combustor, H₂-rich gas mixture, and detector base temperature of 250 °C to produce conditions within the detector that favor the extended lifetime of the sulfur emission, maximize sulfur sensitivity, and optimize sulfur-hydrocarbon selectivity. Using these conditions, individual sulfur peaks in the low-ppb range can be easily detected and quantified in most matrices. Gasoline samples, however, contain high concentrations of many low-molecular-weight hydrocarbon species eluting early in the chromatogram that can interfere with detecting low levels of sulfur under normal conditions. By changing to the larger 3-mm quartz combustor, a slightly more air-rich gas mixture, and more polar GC column, the hydrocarbon interference can be greatly minimized, and in some cases completely eliminated. This poster will describe how simple changes to the standard PFPD sulfur configuration can lower detection limits of sulfur in gasoline by a factor of 10, and how modifications to the gate can further minimize any residual hydrocarbon interference.

Abstract # 004 - 9:30 AM - Exhibit Hall - Poster Presentation - Wednesday
"Developments in Purge-and-Trap Automation"

Laura Chambers, Michael L. Duffy - OI Analytical

Through the last twenty years, the development of purge-and-trap (P&T) instrumentation has seen continuous improvements including introduction of a sophisticated, third-generation sample concentrator two years ago at Pittcon 2003. This poster will introduce additional new developments in P&T instrument design that facilitate more complete automation, minimize down time, and further shorten overall cycle time. The OI Analytical Model 4660 Eclipse Purge-and-Trap Sample Concentrator now includes features that more fully automate the entire VOC analysis procedure, minimizing manual labor, and increasing laboratory revenue. Instrumentation developments include complete automation of all pH measurements in water samples, a step that up until now had to be done manually. Automating this otherwise labor-intensive pH measurement reduces the need to collect replicate sample aliquots, eliminates the need to check the pH of each sample individually and manually record the results in a log, and improves reliability and quality of the data. The reduction in labor results in a direct increase in laboratory revenue. A full description of the system, including its LAN/LIMS reporting capability, will be included. Other improvements in automation include eliminating idle downtime while the autosampler waits for the P&T to cool, shortening cycle times by as much as one to two minutes, a fully-integrated service and maintenance log, improved leak checking, and full LAN capability for offsite monitoring and integration into LIMS systems. A complete description of the newly automated features and benefits to the user will be described.

Abstract # 005 - 2:30 PM - 45 Min - Iris - Wednesday
"Electrical and Mechanical Properties Of Conductive Carbon Black/ Polyolefin Composites Mixed With Carbon Fiber"

A. Farshidfar, V. Haddadi asl, H. Nazokdast - SAPCO

The electrical conductivity of polymers can be increased by the addition of conductive fillers, including forms of carbon fibers and carbon black. The resulting composites can be used in applications where metals have

typically been the materials of choice. The advantages of using these from

materials include lighter weight, resistance to corrosion, and the ability to be readily adapted to the needs of a specific application. One of the most significant applications for conductive polymer composites are conductive carbon-polymer composite electrodes. As many properties such as conductivity, mechanical integrity, low permeability, electrochemical activity and stability in the electrolytes are required of materials to be used as electrodes, so 'material selection' plays a crucial role in fabricating these materials. In this work it was found that high density polyethylene (HDPE)/ethylene-propylene-diene monomer (EPDM) blend ratio (70/30) has lower percolation threshold and volume resistivity than individually carbon black filled HDPE and EPDM due to 'double percolation' effect. Carbon fibers were also added to the polymer-carbon black mixtures to enhance the conductivity and mechanical Properties. The electrical conductivity of composites with different ratios of carbon black (CB) content to carbon fiber (CF) content was studied. The CB content is the main factor to determine the resistivity of the composites filled with CB and CF. Mechanical properties, including tensile strength, elongation at break and impact strength of the conductive composites were evaluated. The results showed that incorporation of CB and CF in the composites will enhance tensile strength, but decrease elongation at break and impact strength of the composites. In mechanical properties, CF content has a greater effect than CB content. From the comparison of the resistivity and mechanical properties of the composites filled with CB and CF with that of the composites filled with CB only, it is concluded that using CF as a substitute for part of the CB in CB-filled composites can enhance electrical and mechanical properties.

Abstract # 006 - 9:00 AM - Poster Presentation - Wednesday
"Elimination of Contaminating Leaks at Interfaces in GC and GC/MS Systems"

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE

Incorporated Differences in materials of construction of interconnecting components forming gas tight seals in GC and GC/MS systems have, at times, led to the incorporation of materials that may not maintain the integrity of the union under all conditions. At elevated temperatures, out-gassing of a seal component may contribute to signal background noise. As the result of temperature or pressure cycling, relaxation within a sealing union may cause the introduction of oxygen or water onto a column, causing stationary phase degradation again leading to an increase in column bleed and potentially decreasing column life; while a leak at a capillary column/mass spectrometer interface will lead to increasing pressure in the vacuum chamber, decreasing detector response. An evaluation of the deformable components of commercial seals indicates the most appropriate closure methods for a variety of applications.

Abstract # 007 - 1:30 PM - 30 min - Hibiscus/Daffodil - Tuesday
"Elimination of False Low Water Results through Karl Fischer Titrant Stabilization"

Larry Girdler, Michael Stern, David Sharp - EMD Chemicals, Inc.

Conformance to a maximum water content specification, as quantified by volumetric KF titration, is a common release criterion used for Quality Control in the manufacture of critical products in the petroleum industry. Preventing the occurrence of false low water readings in products whose performance is severely affected by high out-of-spec water content therefore becomes critical. This paper provides a method for eliminating the false low water errors by means of a stabilized one-component volumetric KF titrant.

Abstract # 008 - 9:30 AM - Exhibit Hall - Poster Presentation - Wednesday
"Elucidation Of Gas Chromatographic Sample Introduction Processes"

Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE

Visual studies by K. Grob et al. and M. Biedermann et al. , , highlighted many of the problems inherent in introducing the maximum or required proportion of a solution reproducibly into the most commonly used GC sample inlet, the flash vaporizer. These and other studies have indicated the difficulties in maintaining a reproducible sample introduction technique. As a corollary, if a consistent injection cannot be achieved, credible analysis may not be feasible, even where internal standards are used. A study, comparable to that of Biedermann, on an inlet system, with construction dimensionally identical to a commercial injector, but with facilities for fluorescence visualization, provides a basis for the study of components and fluid control in the development of a vaporization inlet system capable of totally reproducible solute delivery across an acceptable range of operating parameters. K. Grob, M. Biedermann, J. Chromatogr. A. 897, (2000), 237-246 K. Grob, M. Biedermann, J. Chromatogr. A. 897, (2000), 247-258 M. Biedermann - "Visualization of the Evaporation Process during Classical Split and Splitless Injection in GC" CD ROM from Restek Corp, PA, USA. M. Biedermann, A. Fiscalini, "Large volume CSR split less injection: a look inside the injector and experimental data" 27 th International Symposium on Capillary Chromatography Riva Del Garda Italy 2004

Abstract # 009 - 9:00 AM - Exhibit Hall - Poster Presentation - Wednesday
"Evaluation of Alloys and Coatings in Corrosive Environments"

Gary Barone; Marty Higgins; David Smith - Restek Corporation

Manufacturing control systems and components are most often exposed to environments, process streams, and/or analytical streams that cause corrosive wear. Chemical corrosion of system components has many potential solutions, including unique corrosive-resistant substrates, electrochemical protection through sacrificial and protective coating. Each of these methods has benefits and drawbacks. A variety of substrates and comparative corrosion performances under ASTM and NACE-based testing protocols will be presented. Stainless steels, coated stainless steels and high-performance alloys will be evaluated and compared through performance and costing to better understand the value of each potential solution.

Abstract # 010 - 8:30 AM - 20 minutes - Floral Hall A 2 - Wednesday
"Impact of Sampling and Transfer Component Surface Characteristics on the Analysis of Sulfur and Mercury Containing Streams"
Gary A. Barone; David A. Smith; Marty E. Higgins - Restek Corporation
It is critical to have a sampling and analysis systems capable of reliably and reproducibly transferring low parts-per-billion concentrations of sample streams. Nowhere is this more important than for sulfur analysis systems and the growing applications for mercury analysis. Both require extremely inert sample pathways. A variety of sampling system surfaces will be tested with sulfur and mercury streams. Both flow-through and static storage system surfaces will be involved in the analysis pathway. Surfaces to be evaluated include standard stainless steel, high performance electropolished stainless steel and functionalized amorphous silicon-coated stainless steel.

Abstract # 011 - 11:15 AM - 20 minutes - Floral Hall A 2 - Wednesday
"Improved Analysis of Sulfur Compounds in Gasoline and Diesel Matrices Using the Pulsed Flame Photometric Detector (PFPD)"
Laura Chambers, Michael L. Duffy - OI Analytical
Recent modifications to the normal sulfur PFPD operational configuration have been shown to reduce, and in some cases completely eliminate, the quenching effects of hydrocarbons, and as a result increase PFPD sulfur sensitivity in gasoline by a factor of 10. Analysis of speciated sulfur compounds in gasoline and diesel matrices is complicated by the presence of a complex hydrocarbon background. When using the standard PFPD sulfur configuration, the large number of high concentration hydrocarbons has the potential to quench, or reduce, the response of any co-eluting sulfur peaks, thus limiting detector sensitivity for some of these sample matrices. Simple modifications to the standard PFPD sulfur configuration are able to reduce this quenching effect by minimizing competing side reactions between the S2* and hydrocarbon species present. With the hydrocarbon quenching eliminated more sample can be introduced to the PFPD, and detection limits are significantly improved. This poster will describe two different types of quenching on a PFPD, self-quenching and hydrocarbon quenching, and will illustrate how to recognize and differentiate between them using the PFPD's post-acquisition processing software, PFPDView. The dual gate ratioing capability of the OI PFPD can also be used to clearly indicate when quenching conditions are present in the detector. These capabilities are not available in standard Flame Photometric Detectors (FPD).

Abstract # 012 - 9:45 AM - Exhibit Hall - Poster Presentation - Wednesday
"Increasing The Level Of Testing Standards For Capillary Columns"
Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE Incorporated
There are many criteria associated in testing a capillary column. These range from bleed, polarity, efficiency, film thickness, internal diameter, external diameter and length specifications. Results of the testing criteria are obviously quite critical to the performance of the column and the quality of results. Often though, there is a poor understanding of these criteria. This paper will present data to explain testing criteria of capillary columns and how tolerance variations can affect data. For example, for polar columns, the polarity index (often measured in Kovats units) will affect resolution of critical pairs more than criteria of film thickness or even column efficiency. Bleed levels are often confusing with all suppliers claiming low-bleed columns without reference to a calibration standard. Data will be shown demonstrating acquisition of bleed levels against calibrated standards and a discussion of bleed and affecting parameters. Optimization of an installed column will be explained and how column cutting, connections, gas velocity and even data acquisition parameters can all affect the measure of efficiency. Lower efficiency will result in poorer resolution. Data shown will result in a clearer picture emerging on the importance of capillary column testing criteria and the relationship to the quality of peak separation and data reproducibility.

Abstract # 013 - 2:00 PM - 60 min - Hibiscus/Daffodil - Tuesday
"Karl Fischer Reagent and Instrument Selection for Successful Analysis of Crude Oil and Petroleum Products"
Michael Stern, David Sharp - EMD Chemicals, Inc.
Karl Fischer (KF) titration is the most versatile and established automated method for moisture determination in a variety of sample types. However, crude oil and various petroleum products, such as lubrication oils, are either insoluble in traditional KF solvents, or typically contain compounds known to interfere with the KF analysis. This presentation will discuss how selection of the most appropriate reagents, co-solvents, standards, and auxiliary instrumentation can ensure success in analyzing crude oil and petroleum products for water content using KF titration.

Abstract # 014 -10:00 AM - Exhibit Hall - Poster Presentation - Wednesday
"Myths of Capillary Gas Chromatography: Aqueous Samples"
Dan DiFeo, Peter Dawes, Ruby Ong, Paul Wynne - SGE Incorporated
The development of new techniques and applications in gas chromatography has been restrained by entrenched beliefs and practices. Many of these limitations have been built upon theoretical or practical considerations that have been superseded by new materials and hardware. Typically, while many liquid phases are robust in the presence of water vapor, aqueous matrices are avoided in practice for most GC applications. The stability of BP1, BPX5 (equivalent to 5% phenyl), BPX35 and BPX50 liquid phases for the analysis of aqueous samples is demonstrated. Several applications are described for the direct sampling of aqueous matrices for toxicological and environmental analysis. The injection of samples in aqueous or aqueous-organic solution allows the more flexible use of sample inlet techniques and on-line sample preparation.

Abstract # 016 - 9:00 AM - Exhibit Hall - Poster Presentation - Wednesday
"New Developments in UV-VIS Spectrophotometer Analytical Instrumentation and Software"
Donald Harrington - Hach Company
Although analysis of many key parameters i.e. (Cl, COD, Cu, F, Fe,) in regulatory reporting for Drinking water and Wastewater are considered to be mature techniques, advances in the methodology and refinement of the instrumentation are still being developed. A new spectrophotometer introduces several new design features that enhance technical performance. This poster will present detailed analytical results from the new spectrophotometer, demonstrating its performance when used for the many key parameters in a production laboratory setting. Data presented will include an overview of spectrometric performance as well as method detection limits, initial calibrations, and daily demonstration of on-going performance. Percent Relative Standard Deviations (%RSDs) for initial calibration method performance, precision and sensitivity data will be presented. This instrument is demonstrated to easily meet or exceed all USEPA-approved and accepted method parameters, surpassing the old-style technology and results in significant improvements in laboratory productivity and instrument reliability.

Abstract # 018 -10:30 AM - Exhibit Hall - Poster Presentation - Wednesday
"Quantitative Evaluation Of Gas Chromatographic Capillary Column Bleed"
Dan DiFeo, Peter Dawes, Robert Western, Paul Wynne - SGE Incorporated
GC column bleed is well known to be as the result of the breakdown of the stationary phase, which in the case of siloxane based stationary phases, would predominantly be the six and seven member cyclic siloxane fragments. Other contributions to system bleed are from contaminated components or breakdown of the components in the system as well contamination that has built up in the capillary column and is eluting the column on temperature programming. It is common to see bleed measures of capillary columns expressed as picoamps signal from a Flame Ionization Detector (FID) or signal on a MS, but these measures depend on other variables that make it impossible to be used for quantitative determination of system bleed. The bleed has never been reported in correct absolute terms. With an absolute measure of column bleed established an assessment of all contributions to system bleed will be shown.

Abstract # 020 - 9:30 AM - Exhibit Hall - Poster Presentation - Wednesday
"Contrasting Methods for the Measurement of Dissolved Oxygen: A Case for Luminescent Dissolved Oxygen Sensors"
Donald Harrington - Hach Company
Attempts to measure dissolved oxygen (DO) in water and wastewater are hampered by a lack of robust analytical techniques that are accurate, precise, easy to use, and resistant to matrix interferences. The two EPA methods currently approved to measure DO (Winkler titration and membrane electrode) often fail in delivering interference free readings that are accurate and precise across the BOD range of 1.0 to 20 mg/L DO. As a counter measure to these deficiencies, Hach Company has developed a luminescence dissolved oxygen (LDO®) sensor to be used in water and wastewater for regulatory compliance and process control. As a result, an in-house LDO validation study was performed to evaluate and establish precision and accuracy from reference water and wastewater. This manuscript contrasts the theory and performance of DO measurement from Winkler titration and membrane electrodes with that LDO method. The chemistry of each method is discussed along with determinant performance and interference pitfalls. Data is presented that demonstrates the superiority of LDO over the currently approved EPA methods.

Abstract # 021 - 9:00 - Exhibit Hall - Poster Presentation - Wednesday
"New Total Organic Carbon (TOC) Analyzer Has Been Developed Providing Enhanced Long-term Stability, Greater Accuracy and Greater Range for Analysis of Water, Waste Water and Soil."
Donald Harrington - Hach Company
A new technology has been developed for the analysis of (Total Organic Carbon) TOC that enables long-term calibration stability. The new technology can increase the calibration up to one year, saving time and money. Vita Technique-computer aided normalization of the NDIR signal produces long-term stability and high reproducibility. The precise and very sensitive analysis of TIC, TOC, TC, NPOC, and POC is combined with the innovative VITA technique (retention-time coupled integration for TOC analysis). This new technology, which provides unrivaled reliability and robustness, is achieved by the use of modern signal analysis techniques making the analyte signal independent of variations in analyte gas flow. On the new TOC analyzer, the flow rate of the analyte gas is measured parallel to the detection of the NDIR signal and any fluctuations in gas flow are compensated by computer-aided normalization of the NDIR signal to a constant flow rate. Now two parameters, TOC and TN can be analyzed from a single injection; Simultaneous TOC/TN analysis is accomplished by the use of additional detection systems for TN analysis after thermo catalytic oxidation. The analyzers employ high-sensitivity chemiluminescence detectors (CLDplus), innovative and cost-effective electrochemical solid-state detectors as well as high-sensitivity NDIR detectors. This MultiDetector system allows automatic switching calibration curves, 3 detectors running in parallel providing no over ranged samples.

Abstract # 023 - 3:30 PM - 30 minutes - Iris - Tuesday
"A New Type of GC-MS with Advanced Capabilities for Petrochemical and Other Analyses"
Aviv Amirav, Alexander B. Fialkov, Urs Steiner and Larry Jones - Tel Aviv University and Varian Inc.
We have combined the benefits of supersonic molecular beam interface and its fly-through EI ion source with the advanced features of the Varian 1200

GC-MS and MS-MS, resulting in a new and powerful GC-MS platform with record setting performance. A) GC/MS of hydrocarbons over 1000u will be demonstrated, with dominant molecular ions. B) GC/MS of highly thermally labile compounds will be shown. C) Improved S/N is obtained through enhanced molecular ion. D) Improved MS/MS selectivity and sensitivity is obtained on enhanced molecular ions. E) Fast GC/MS analysis is enabled with very high column flow rate and system selectivity.

Abstract # 024 - 2:30 PM - Exhibit Hall - Poster Presentation - Wednesday
"ASTM D6584 Supelco pre-Mixed Glycerin in Biodiesel Standards"

Kathy H. Kiefer James H. Walbridge Steven P. Cecil - Supelco
Biodiesel is a renewable fuel for diesel engines derived from natural oils like soybean oil, which meets the specifications of ASTM D6751. Biodiesel is an alternative fuel containing no petroleum, but it can be blended at any level with petroleum diesel to create a Biodiesel blend. Biodiesel use is increasing in the United States since the implementation of the Energy Policy Act (EPACT) of 1992 (amended in 1998), which authorized federal, state and public utilities to use Biodiesel to meet the alternative fuel vehicle requirements of EPACT. Biodiesel is produced from vegetable oils or animal fat through a refinery process called transesterification. This process produces chemical compounds known as fatty acid methyl esters. When used as fuel, these methyl esters are called Biodiesel. The transesterification process is a reaction of the oils or fat with an alcohol to produce chemical compounds known as triglycerides and glycerin. The triglycerides are further broken down into the desired methyl esters and glycerin by-product. The methyl esters, or Biodiesel, is then separated and purified to remove free and bonded glycerin. Glycerin content reflects the quality of Biodiesel. A high content of free and total glycerin in the Biodiesel product can cause storage, fuel system, or engine problems. Separation of the glycerin. can lead to build up in fuel tanks, clogged fuel systems, injector deposits and filter plugging. High glycerin content can also lead to injector fouling and may contribute to the formation of deposits at injection nozzles, piston, and valves Commercially available blends of low-level glycerin in Biodiesel Standards (mono-, di-, and triglycerides) will be derivatized and analyzed by capillary gas chromatography demonstrating the separation and identification of the free and bonded glycerin by-product content in Biodiesel solutions.

Abstract # 025 - 1:30 PM - 25 minutes - Floral Hall A 2 - Tuesday
"The Industrial Mass Spectrometer Solution for Natural Gas Processing Plants"

Sudhir Kulkarni, PhD Zbigniew Krieger, PhD - ABB Inc. Analytical
"The Quadrupole IMS (Industrial Mass Spectrometer) has already proven in the HPI industry that it is a useful process control analyzer. For ammonia and methanol processes, the sensitivity, analysis speed and multi-stream capability of the IMS has turned out to be an effective way of maximizing process efficiency. In both ammonia and methanol applications, the natural gas stream has been routinely analyzed for getting component concentrations and reporting BTU values. Since natural gas products are priced according to their BTU values, the IMS is finding its place in the natural gas processing plants where, not only is one MS capable of replacing several conventional BTU analyzers, but the IMS is able to analyze individual sulfur components such as H₂S and COS. The excellent sensitivity of the IMS and its fast analysis speed give a very tight control over sulfur removal processes." ABB Workshop (Hospitality to follow)

Abstract # 026 - 2:00 PM - 25 minutes - Bluebonnet/Orchid - Tuesday
"Applications of PTV Injection for Problem Solving in the Petrochemical Industry: Thermal Desorption with GC-MS"

Rachel Kohn, Ph.D. and Robert Sandor Ph.D. - Optichem LLC
Programmable Temperature Vaporising Injection (PTV) has been used extensively as a means of injecting large volumes of samples to enhance sensitivity. This paper describes the use of PTV injection for the analysis of a range of solid samples. Four examples of this application as a problem solving tool are described in detail. Detection by mass spectrometry was used extensively as a means of identification of the components in the various samples characterized.

Abstract # 027 - 2:30 PM - 25 minutes - Bluebonnet/Orchid - Tuesday
"Automated Analysis of Trace Organics in Water by On-line SPE-PTV-GCMS"

Robert Sandor Ph.D. and Rachel Kohn, Ph.D. - Optichem LLC
The monitoring of water samples for the presence of trace organics requires sensitive and selective analytical methods. The determination of organic substances in water commonly involves trace enrichment of the compounds of interest. This preconcentration step is often combined with capillary gas chromatography (GC), mainly because of the excellent separation efficiency of this technique. In this presentation, a fully automated solid-phase extraction (SPE)-PTV-GCMS system is described. The system is based on the ATAS OPTIC as injection interface, used as a programmable temperature vaporiser (PTV). In the system a SPE cartridge is first automatically flushed with methanol and water. Then the analytes of the sample are passed through and enriched. Finally, after drying the cartridge by a flow of nitrogen, the analytes are desorbed and directly injected into the large volume liner followed by GC-MS analysis. The water samples under investigation are analyzed for the presence of a selected group of N- and P-containing organic traces."

Abstract # 028 - 11:00 - 30 minutes - Jasmine - Wednesday
"Automated Measurement of Base Number by Potentiometric Titration ASTM D2896"

Tiffany Reid, Christopher Smith, Christopher Rodriguez - Man-Tech Associates, Inc.

It will be illustrated that automated measurement of base number using ASTM D2896 is a simple, effective, and accurate method. Versatile software is used for smooth, unattended automation and analysis. Quality control charts and custom reports are produced, and common parameters can be adjusted. Calculations run automatically. Titrations are quick and precise, and automated solvent handling provides consistent solvent addition plus waste solvent extraction, minimizing analysts' exposure to hazardous chemicals. Details of the method and results for Base Number over a range of concentrations using two different solvent matrices will be presented.

Abstract # 029 - 3:00 PM - 30 minutes - Jasmine - Tuesday
"Automating BOD Analysis"

Chris Smith and Chris Rodriguez - Man-Tech Associates Inc.
Biological Oxygen Demand (BOD) is a common yet labor intensive analysis that is often utilized as a primary screening tool for organic pollutants. As such it is typically a required parameter by most wastewater discharge permits. The test requires significant sample preparation, Dissolved Oxygen measurement, sample incubation for five days, then a second DO measurement followed by calculations. This presentation will focus on automating this time consuming task with modern instrumentation while also providing secure, defensible results utilizing data collection/processing software.

Abstract # 030 - 10:30 AM - Exhibit Hall- Poster Presentation - Wednesday
"Improved Confidence Level in Sample Identification with the Supersonic GC-MS"

Aviv Amirav, Alexander Gordin, Alexander B. Fialkov and Tal Alon - Tel Aviv University
GC-MS with supersonic molecular beams is characterized by enhanced molecular ion and mass spectral information for the provision of ultimate confidence level in sample identification through: 1. Provision of trustworthy abundant molecular ions to all samples. 2. Confirmation of the molecular ion if needed with cluster CI. 3. Provision of high probability library identification. 4. Using a unique isotope abundance analysis software for the confirmation or rejection of library identification and for the provision of elemental formulas. 5. Providing enhanced structural and isomer MS information. 6. Providing the above to an extended range of labile and low volatility compounds.

Abstract # 031 - 10:30 AM - 30 minutes - Jasmine - Wednesday
"Novel Approach for Analysis of Chloride, Thiosulfate, Thiocyanate and other anions in Presence of High Sulfide (H₂S) Content"

Jay Gandhi - Metrohm-Peak Inc.
Analysis of anions by ion chromatography in the presence of high Hydrogen Sulfide (H₂S) content can be challenging for ion chromatographers. Specifically, the reproducible analysis of low level Chloride can be difficult. This presentation will demonstrate novel approach for the anion analysis. Ease of use with automation and in-line sample preparation techniques will be discussed.

Abstract # 032 - 3:00 - 30 minutes - Floral Hall A 2 - Wednesday
"On-Line Raman Analysis of Ethylene and Hexene in the Phillips 1-Hexene and Polyethylene Processes"

Sameer Londhe, David R. Battiste, Ron D. Knudsen, Bruce E. Kreischer, Max P. McDaniel, Joel L. Martin and Elizabeth A. Benham; Phillips Petroleum, & M. Edward Womble & Tim Deschaines; Raman Systems, Inc.
We show in this work the utility of a low cost Low Resolution Raman spectrometer for on-line quantitative analysis of reactants and products in the Phillips selective process for the conversion of ethylene to hexene. We also provide a status report on the state of this technology and its application to on-line reactant analysis in the polyethylene process.

Abstract # 033 - 9:00 AM - 2 hours - Bluebonnet/Orchid - Thursday
"PANalytical X-Ray Diffraction Training"

Training Course - 2 hours Abstract # 033

Abstract # 034 - 11:00 AM - 4 hours - Bluebonnet/Orchid - Thursday
"PANalytical's Wavelength Dispersive XRF Training"

Wavelength Dispersive XRF Training Course - 4 hours

Abstract # 035 - 9:30 AM - 20 min. - Floral Hall A 2 - Wednesday
"Recent Advancements in Total Sulfur Analysis by Excimer UV Fluorescence Detection"

Franek Olstowski- ATOM Instrument Corp.
The growing need for accurate determination of reduced concentrations of sulfur in fuels has given rise to the development of Excimer UV Fluorescence. Introduced at the 100th Anniversary of the GCC last year, this innovative analytical technique has continued to demonstrate significant potential relative to results obtained utilizing previously applied excitation sources. Analytical improvements include higher sensitivity to sulfur and lower sensitivity to nitrogen interference, predominantly from molecular bound species within the sample matrix. Ongoing efforts have recently led to even further enhancement of analysis performance and attainable nitrogen interference rejection ratios. This makes Excimer UV Fluorescence particularly well suited to demanding laboratory and online applications such as ultra-low level (ULL) sulfur in fuels and analysis of lubricants with high levels of nitrogen additives.

Abstract # 036 - 9:15 AM - 30 minutes - Floral Hall A 2 - Wednesday
"Recent Developments in Sulfur Measurements Of ULSD Samples"

Michael C. Pohl, David Malone - Horiba Instruments, Inc.
New regulations relating to ultra-low sulfur diesel fuels (ULSD) go into

effect in mid 2006. These regulations have necessitated the development of new methods to measure these very low sulfur fuels. Many of these methods have been reviewed and approved by ASTM over the past years. In an effort to judge the capabilities of these various methods and instruments, the EPA has organized a round robin study to verify performance. This will result in a huge report with loads of statistical data. This talk will discuss the various methods and instruments that were a part of this study. Their capabilities as defined by ASTM will be compared and contrasted. Previous results from round robin studies will be presented and evaluated. The benefits and limitations of the techniques will be discussed. The preliminary data from the EPA study will be shown. Possible conclusions from the study will be proposed.

Abstract# 037 - 2:30 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Software-Controlled Elimination of Retention Time Drift"
Brian Rohrback, Infometrix, Inc. and Don Crider, AC Analytical Controls
When determining the composition of refinery fractions, it is common for chromatographic and sampling variability to result. In most systems, this fluctuation forces the operator to review and occasionally intervene to insure precise, reproducible peak identification. As incorporated for Agilent's ChemStation and EZChrom software, a software utility has been built to correct for retention time shift after the fact. This automated signal alignment tool can eliminate run-to-run variability, greatly reducing the need for manual intervention. GC results will be objectively analyzed and consistently interpreted throughout the company's refining operations and can be used with any type of chromatographic data.

Abstract # 038 - 10:30 AM - 30 minutes - Jasmine - Wednesday
"The Determination Of Mercury At Or Below The Part Per Trillion Level: Methods, Requirements And Best Practices"
David Pfeil, Dr. Peter Brown, Bruce MacAllister, Craig Seeley - Teledyne Leeman Labs

In order to obtain the desired levels of detectability, analysts are turning to cold vapor generation coupled with gold amalgamation and atomic fluorescence detection. However, because of the extremely low detection limits of this technique, the problem of contamination becomes a major concern. And even if the analysts follows scrupulous analytical technique; the system can be contaminated by samples that have an unexpectedly high concentration of mercury. In this work, a new automated mercury analyzer, the Hydra Af Gold Plus, combines the analytical capabilities of a cold vapor atomic fluorescence system with the ability to selectively use gold amalgamation to enhance detection limits. By utilizing two independent fluorescence detectors, the analyzer provides an unparalleled working range for mercury determinations (from 10 to 200 parts-per-trillion without gold amalgamation and from 0.05 to 25 parts-per-trillion with gold amalgamation).

Abstract # 039 -11:00 AM - Poster Presentation -Exhibit Hall - Wednesday
"Ultra High Throughput Microwave Assisted Evaporations and Concentrations"
Maxsell Dickey - CEM Corporation
Despite the recent advances in throughput for microwave based dissolutions and extractions, throughput limitations have still limited the batch size for pre or post extraction concentration, to around 10 to 12 samples. The inherent advantages of microwave concentration, in that as the sample approaches dryness, the temperature of the concentrate actually decreases, have not previously been applied to large batches of simultaneously processed samples. In this paper a novel ultra high throughput microwave concentration instrument will be presented with selection of sub-boiling or at boiling concentration. Analytical results reflecting the cleanliness advantages of this methodology - speed, throughput and control of the sample environment in terms of cleanliness will be shown. This paper will also discuss the advantages of high throughput microwave concentration where the batch size for processing will be demonstrated at a very high level. Analytical data will be presented demonstrating the improvements in time and cleanliness with this approach along with significant throughput improvements and an increase in capacity for this technique far in excess of current commercial equipment.

Abstract # 040 - 3:00 PM - 2 hours - Bluebonnet/Orchid - Thursday
"PANalytical's Energy Dispersive Training Course"
Energy Dispersive Training Course - 2 hours

Abstract # 041 - 2:00 PM - - 30 minutes - Iris - Wednesday
"Salt Effects upon the Electronic Absorption Spectra of Indicator Dyes"
Cyril Parkanyi, Zuzana Zajickova, Willem H. Mulder, and Jean-Jacques Aaron - Florida Atlantic University
Solvatochromic equations are typically used to determine experimental excited-state dipole moments of various compounds, using their ground-state dipole moments and electronic absorption and emission spectra obtained in solvents of different polarity. Recently, we have developed new, improved solvatochromic equations for this purpose and currently we are investigating their practical applications. These new equations can also be used to study the effect of added salts. Until now, only a few detailed studies devoted to the effect of salts upon electronic absorption spectra have appeared in the literature. In our study, we have used several acid-base indicator dyes [p-nitrophenol, p-phenylazobenzene (p-hydroxyazobenzene), methyl yellow, methyl red, methyl orange, and phenol red] in various solvents containing an added salt (lithium perchlorate, lithium chloride, sodium iodide, and potassium iodide). The results will be discussed.

Abstract # 042 - 3:00 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Effective Use of Software for Processing Fast GC Data"
Brian Rohrback (Infometrix), Scott Ramos (Infometrix), Ned Roques (Analytical Specialists, Inc.), Frank Tontala (Scientific Software, Inc.) and John Crandall (Analytical Specialists, Inc.)
As GC instruments get faster, the need for rethinking reporting is great. We demonstrate software that can be added to any instrument, where the critical pieces of information are extracted, the chromatograms are interpreted, and a summary report is assembled on a daily basis in HTML form. In addition, if a situation that could lead to an upset is detected, the software can flag the supervisor using standard communication protocols (web, pager, email). A commercial example is shown for a fast FID GC monitoring HRVOCs. Other applications in quality control for the hydrocarbon processing industry will be demonstrated as well.

Abstract # 043 - 1:30 PM - 30 minutes - Floral Hall A 2 - Wednesday
"Using Fast GC To Sense Process Upsets"
John Crandall (ASI), Edward Overton (Louisiana State University), Ned Roques (ASI), and Brian Rohrback (Infometrix, Inc.)
Everyone wants things to happen now. If you are a chromatographer, until recently "now" has been defined in minutes or hours rather than seconds. Every day life in the processing industries bring more examples where some type of composition analysis really is needed quickly, where processing can be done in seconds not minutes using a fast gas chromatograph. To function efficiently, a GC must be simple and fast, easy to use, and reliable; because the concentrations are low, the applications require FID. Employing direct column heating, a compact GC can achieve the speed required to insure a suitable rapid response.

Abstract # 044 - 10:30 AM -Exhibit Hall -Poster Presentation - Wednesday
"High Speed PONA Analysis For Detailed Hydrocarbon Analysis Extended (DHAX) Using Hydrogen Carrier Gas For The Determination of Individual Components In Spark Ignition Fuels"
Barry L. Burger, Neil Johansen Valerie Gamble Donald Rhoades - Restek Corporation
In most applications hydrogen is a better alternative to helium as the carrier gas of choice because it can be used at much higher linear velocities without compromising critical resolutions. A proposed revision to ASTM D 6730-01 by Neil Johansen in Association with Envantage Analytical Software Inc. has established optimal DHAX (detailed hydrocarbon analysis extended) parameters using hydrogen carrier gas resulting in an analysis time of less than 71 minutes (C13), a 53% reduction in analysis versus the same analysis using helium carrier gas. The method is also extended to include middle-distillates having final boiling points up to n C38, 509 C (948 F).

Abstract # 045 - 10:30 AM - 45 minutes - Bluebonnet/Orchid - Tuesday
"New Functionalised Ionic Liquids And Their Commercial Availability From Merck KGaA/EMD"
Urs Welz-Biermann - Merck KGaA
Merck KGaA/EMD is also a leading supplier of Ionic Liquids to the world market and an expert in the custom manufacturing of tailor-made Ionic Liquids. As solvents, catalysts and electrolytes for use in sustainable processes, Ionic Liquids represent a bold opportunity to innovate. Their ability to effect the outcomes of catalytic reactions has been clearly demonstrated and often explained. Their low vapour pressures make them ideal replacements for highly volatile organic solvents, reducing the pollution caused by solvent evaporation.

Abstract # 046 - 11:15 AM - 45 minutes - Bluebonnet/Orchid - Tuesday
"Task-specific Ionic Liquids (TSIL): Novel New Materials For Petrochemically Relevant Catalysis And Separations"
James H. Davis, Jr.; Robin D. Rogers; Morgan D. Tickell; Scott Griffin; Ashley Smith - Univ. of South Alabama, Department of Chemistry
Ionic liquids (IL) are salts which melt below 100 C and which manifest a number of unique characteristics, including non-volatility and non-flammability. Salts of this type may be prepared which incorporate functional groups linked to the ions, imparting to them a capacity to interact with substrates on a stoichiometric or catalytic basis. Here we discuss two categories of functionalized IL, bearing sulfonic acid or amine moieties. We will discuss their use for strong acid catalysis and for acid gas separations.

Abstract # 047 - 2:30 PM - 30 minutes - Jasmine - Tuesday
"A Rapid Technique for the Extraction of Persistent Organic Pollutants (POPs) Using Accelerated Solvent Extraction (ASE)"
Lisa Lenehan, Sheldon Henderson, Eric Francis, Jennifer Peterson and Bruce Richter - Dionex Corporation
The UNEP has begun a program to take action against selected persistent organic pollutants (POPs) found in both environmental and biological samples. This paper will present data that compares Accelerated Solvent Extraction (ASE) with Soxhlet extraction for the extraction of POPs from various sample matrices. The data will show that the ASE technique has equivalent and sometimes better results than Soxhlet while saving significant time and solvent.

Abstract # 048 - 2:30 PM - 20 minutes - Iris - Tuesday
"A Simple GC Method for the Methanol Measurement"
Jay K. Kim, Arden R. Strycker - Northrop Grumman
Methanol added to crude oils to eliminate hydrate formation during the offshore drilling operations has a negative impact on the downstream process. Using the same GC configuration for the DHA analysis, a 30 meter column was used to separate methanol and iso-butane in natural crude oils at sub-zero oven temperature. The oven temperature was further adjusted

to set the internal standard, iso-propanol, peak between iso-pentane and n-pentane peaks. A flame ionization detector was used. Finally, data of this experiment were compared with methanol as determined by ASTM D7059 method.

Abstract # 049 - 3:00 PM - 25 minutes - Floral Hall A 2 - Tuesday
"ABB and Agilent – Two Companies Synonymous with GC"
Steve Bostic, Jerry M. Clemons, Ph.D. - ABB Inc. Analytical
ABB and Agilent, two companies synonymous with GC and with more than 75 years on-line and Laboratory GC excellence, present a new Laboratory Sulfur GC, the model LGC2007, for measuring total sulfur in fuels. ABB is incorporating Agilent's new Model 6850 Series II Gas Chromatograph (GC) with ABB's Oxidation Furnace, Flame Photometric Detector (FPD) and Column to produce a laboratory method based on ABB's model PGC2007 on-line Fuel Sulfur Analyzer ASTM Method D7041-04. ASTM Method D7041-04 is the only method to date that meets EPA (40 CFR Parts 80, 85, and 86) requirements for trace sulfur in diesel compliance measurement less than 15 ppm. The D7041-04 repeatability and precision is 2-5 times better than all other ASTM total sulfur methods. The FPD used in the on-line PGC2007 and the laboratory LGC2007 can measure the total sulfur below 1 ppm to levels greater than 100 ppm. Incorporating Agilent's 6850 Series II highly reproducible oven, retention time locking, and its very fast 27 vial auto sampler injector provides a lab method that is proven, simple, safe, familiar technology. Validating total sulfur fuels for compliance has never been so easy or reliable than the model LGC2007.

Abstract # 050 - 3:30 PM - 30 minutes - Floral Hall A 2 - Tuesday
"Chromatography Has Never Been More Simple, More Reliable and More Flexible"
Steve Bostic, Tracy Dye, Kenneth Melda - ABB Inc. Analytical
Introducing the new PGC5000 Process Gas Chromatograph Series where chromatography has never been more simple, more reliable and more flexible. The new graphics driven HMI and method editor makes interacting with the GC as simple as 'point' and 'click'. No more than two steps to access all major functions, it is the simplest and most intuitive HMI ever introduced with a Process GC. The new method editor makes developing, editing, and changing methods for simple or complex applications so easy that every one wants to be an 'application engineer'. The PGC5000 master controller supports up to four PGC5000B ovens. An oven may be dedicated to a specific analysis or up to four ovens can be used to complete a specific analysis. Each oven has its own dedicated controller which communicates with the master controller. The PGC5000B platform is much smaller than the existing PGC2000 series and is designed for simple analysis or keeping complex analysis simple. It contains a TC or FID detector and no more than three oven valves. This keeps each dedicated oven very simple and results in greater reliability. By combining up to four ovens, complex analysis can be made simple. With the PGC5000B you can have a combination of up to four TC/FID detectors and 12 valves via the four ovens. The result is unlimited applications capability and matchless flexibility.

Abstract # 051 - 2:30 PM - 30 minutes - Floral Hall A 2 - Tuesday
"Energy Saving Methodology For Crude Oil Distillation System"
Vikas Rastogi, Dr. Megan Jobson, and Prof. Robin Smith - Centre for Process Integration
The paper presents a methodology to explore energy saving opportunities in refinery crude oil distillation system. The refinery distillation system includes the atmospheric and vacuum distillation columns and the associated heat exchanger network (HEN). In this work, the short-cut models are developed for the atmospheric and vacuum distillation columns. A simple and robust model is developed for HEN. These models are simple and fast in computation. An optimisation framework is developed based on stochastic optimisation. The objective of the optimisation is to minimise the total annualised cost of the system, including the hot and cold utility costs. The feed preheat temperatures, stripping steam flow rates, reflux ratio, pump-around flow rates and temperature drops are optimised simultaneously. This methodology is applied to an existing crude oil distillation system. In this case, the total annualised cost is reduced by 18% (2 MM\$/yr) by changing the operating conditions of the distillation columns and making minor modifications to the heat exchanger network. In the present case, a new heat exchanger is added and area is added to five existing heat exchangers. The optimisation framework can be used to achieve other objectives, such as increasing profit, reducing greenhouse gases emission, throughput increase, etc.

Abstract # 052 - 1:00 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Rapid Optimization Of Gradient IC Separations Through Predictive Modeling"
Lisa Lenehan, John Madden, Jim Schibler - Dionex Corporation
The traditional optimization of Ion Chromatographic separations is a laborious process that can consume samples, eluents, instrument time, and operator time. This paper will present a new software tool for the predictive modeling of IC isocratic and gradient separations. The tool uses retention algorithms and known retention data to accurately predict retention of specified analytes under various conditions for selected ion exchange columns. With the new tool, the optimum IC column and separation conditions for resolving specified analytes can be determined in just a few minutes, without doing any laboratory work, thus saving labor and resources.

Abstract # 053 - 3:30 PM - 30 minutes - Floral Hall A 2 - Wednesday
"Real-Time and In-Process Monitoring and Control of Petroleum Processes"
Eric J. Hukkanen, Ph.D. - Mettler Toledo AutoChem, Inc.
There is a significant demand in the petroleum industry for in-line and real-time instruments that are capable of accurate and precise process monitoring and product quality measurements. The Mettler-Toledo Lasentec in-line Focused Beam Reflectance (FBRM) particle size characterization probe and Particle Vision and Measurement (PVM) in-process imaging system have been successfully implemented for monitoring particle behavior in opaque/black process fluids, elevated pressures and temperatures, and toxic and air sensitive materials. Several case studies are presented, in which the particle size distribution was characterized: multi-phase systems (crude oil, water, particulate matter), crude oil and water emulsions, gas hydrates, and polyolefin polymerization.

Abstract # 054 - 2:00 PM - 30 minutes - Floral Hall A 2 - Wednesday
"RFID Technology for the Laboratory and Advanced Process Control"
Jonathan Richter - Baytek International
Radio Frequency Identification Devices (RFIDs) are hot items in the high-tech, automation community, but what relevance do they have in the laboratory and what value can they bring to advanced process control? This seminar takes the RFID discussion from 50,000 feet in the clouds right down onto the workbench in the laboratory by giving an easy to understand overview of RFIDs followed by a discussion of the cost effectiveness, feasibility, and possibility of practical applications such as: sample tracking, sample verification, instrument control, workflow management, RMP equipment maintenance, and fugitive emissions.

Abstract # 055 - 3:00 PM - Poster Presentation - Exhibit Hall - Wednesday
"Surfactant Analysis by Evaporative Light Scattering Detector: the Instrument Conditions"
Jinchuan Yang, Alice Di Gioia - Waters Corporation
A series of fatty acids is analyzed by HPLC using Waters 2420 evaporative light scattering detector. A good separation of these fatty acids based on their chain length is achieved. Undecanoic acid (MW 186.3) is the smallest fatty acid detected in this study. Effects of operational parameters on the response of the ELSD, such as drift-tube temperature and gas supply pressure, are also studied. Finally, a calibration of the ELSD detector is conducted. A power law relationship between the ELSD response (peak height) and surfactant mass load is obtained.

Abstract # 056 - 1:30 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Acclaim Columns: A Simple Solution to Difficult Separations"
Matthew Neely, Xiaodong Liu, and Christopher Pohl - Dionex Corporation
The Acclaim Surfactant column is a new column designed for, and ideally suited to, the separation of a variety of different classes of surfactant. This column contains a bonded-silica phase, which has a proprietary ligand that offers ideal selectivity and unprecedented capacity for separating anionic, nonionic, and cationic surfactants in a single run. This presentation will also discuss the Acclaim PolarAdvantage II (PA2). The PA2 columns feature a patent-pending bonding chemistry that provides enhanced hydrolytic stability from pH 1.5-10 and allows a single column to resolve both polar and nonpolar analytes.

Abstract # 057 - 9:00 AM - Poster Presentation - Exhibit Hall - Wednesday
"Strategies for Increasing Sample Throughput in High Performance Liquid Chromatography"
Matthew Neely, Giovanni. Maio, and Frank Arnold - Dionex Corporation
Nowadays, laboratories need to process increasing sample numbers without additional resources or without additional laboratory space. A common approach to increase throughput requires changing key method parameters like dimensions, column particle sizes, temperature, and flow rates. However, this is often not an option. As an alternative approach, laboratories can increase throughput by the use of dual-column tandem operation, with off-line column reconditioning. This poster compares the two strategies for higher throughput and makes recommendations for their use in different work environments. It shows the performance of a Summit HPLC system optimized for fast chromatography, at high flow rates, with small particle size columns. Further, demonstrates the use of a Summit x2 Dual-Gradient HPLC system for tandem operation.

Abstract # 058 - 10:00 AM - Poster Presentation - Exhibit Hall - Wednesday
"A Valveless Sample Handling System for a High Temperature Combustion TOC Analyzer"
Brian Wallace, Steve Proffitt - Teledyne Tekmar
Many applications require TOC analysis of highly particulated samples or difficult matrices. On traditional analyzers that employ valves in the sample pathway, these applications require either additional maintenance or cannot be run without significant pre-treatment. A new sample handling system has been created that uses injection ports mounted on an autosampler to allow sample to be injected and then swept with deionized water to the combustion furnace. Benefits of this system include minimal sample usage that limits the potential for problems and a unique self-cleaning TOC methodology that minimizes instrument maintenance for wastewater, brine solutions and industrial waste effluent applications.

Abstract # 059 - 10:30 AM - Poster Presentation - Exhibit Hall - Wednesday
"Analytical Steps to Comply with the USEPA's New 415.3 Method for Total Organic Carbon (TOC) Analysis"
Brian Wallace, Steve Proffitt - Teledyne Tekmar
This presentation will discuss how to implement a comprehensive monitoring plan for TOC analysis in drinking water municipalities. Helpful

hints in optimizing instrument performance while maintaining a nominal analysis time will be described from the initial demonstration of a TOC analyzer's capability through the creation of a standard operating procedure for TOC samples. Multiple water streams will be analyzed to display the implementation of method 415.3 for real world samples. Calibration standards along with certified, quality control proficiency standards will be analyzed for accuracy and precision measurements in compliance with 415.3.

Abstract # 060 – 11:00 AM – Poster Presentation - Exhibit Hall - Wednesday
"The Benefits of Total Nitrogen Monitoring for Manufacturing Wastewater Quality"

Brian Wallace, Steve Proffitt - Teledyne Tekmar

Nitrogen monitoring is an important element of process control for treatment of wastewater from manufacturing processes. New advances in high temperature combustion (HTC) technology with chemiluminescence detection provide a quick and easy way to monitor nitrogen loading by total bound nitrogen (TNb) analysis. Since this analysis can be performed simultaneously with traditional total organic carbon (TOC) analysis, the analytical benefits can be achieved with minimal labor and capital expenditure, boosting productivity and lowering costs over existing nitrogen analysis. Steps at implementing TNb and TOC as an environmental measurement of wastewater quality will be presented for potential manufacturing process contaminants.

Abstract # 061 – 1:00 PM - 30 minutes – Iris - Wednesday
"Waters GPC2000 Triple Detection With Single Software Control"

Alice Di Gioia Jinchuan Yang - Waters Corporation

The use of multiple detectors in size-exclusion chromatography (SEC) gains more and more attention. In particular the addition of a light scattering (LS) detector onto a SEC-Viscometry (SEC-V) system has become a popular configuration for many scientists and SEC practitioners. The combination of LS and Viscometry with traditional SEC measurement provides much more information about polymer properties than the individual measurements combined. This raises new requests on SEC instrumentation. Recently some enhancements were made to the Waters Alliance GPC2000 systems to allow single software control on triple detection in SEC measurements. This configuration of GPC2000 is described with an example of long chain branching measurement of polyolefin samples.

Abstract # 062 – 2:30 PM - 20 minutes – Floral Hall A 2 - Tuesday
"ASTM D3710 in Less Than 4 Minutes – The Fast GC (PGC2009)"

Steve Bostic, Ken Melda - ABB Inc. Analytical

Previous temperature programmed gas chromatograph technologies have provided Simulated Distillation results using ASTM D3710 for Gasoline and D2887 for other Distillates. These applications resulted in analysis cycle times of about 16 minutes. The Fast GC (PGC2009) analysis cycle is approximately 4 minutes. The Fast GC vs. Conventional Simulated Distillation - it's like comparing a horse drawn carriage to an automobile. With a total analysis cycle of only 240 seconds for gasoline and 180 seconds for other distillates, this new simulated distillation method can radically and positively change the way blending operations are accomplished in the production of gasoline. It is typical to blend to a tank, using an averaging method to determine the concentration of the hydrocarbon cuts in the fuel mixture. A faster on-line analysis technique allows the refiner to blend to a pipeline, eliminating storage costs. This method also presents an opportunity to truly optimize the blending process and maximize the margin on gasoline products.

Abstract # 063 – 10:30 AM - 20 minutes - Bluebonnet/Orchid - Wednesday
"Automatic Colorization for Images from Comprehensive Two-dimensional Gas Chromatography"

Arvind Visvanathan and Stephen E. Reichenbach - University of Nebraska Lincoln

Comprehensive two-dimensional gas chromatography (GCxGC) presents challenges in visualization, data handling, processing and analysis. GCxGC data can be represented as a two-dimensional image. Visualizing an image includes presenting the data to the user in a comprehensible format to interpret the data and do further processing and analysis. However, GCxGC images are quite variable, requiring image-specific colorization. This paper develops a gradient-based automatic colorization technique for visualization of GCxGC images. The colorization can also be used in shading three-dimensional views of GCxGC images. The technique is not specific to GCxGC images only, but also can be used in other applications such as elevation and topography. Keywords: Comprehensive two-dimensional gas chromatography, GCxGC, visualization, gradient based, automatic colorization.

Abstract # 064 – 8:45 AM - 20 minutes - Floral Hall A 2 - Wednesday
"A New Bench-Top WDXRF System For Sulfur Analysis"

Makoto Doi, Kohei Kansai, Hisashi Inoue, Takashi Yamada, Hisayuki Kohno and Al Martin - RIGAKU Industrial Corporation

A new XRF (x-ray fluorescence) spectrometer for low level sulfur analysis has been developed. Conventional small XRF systems for sulfur analysis are energy-dispersive systems equipped with a proportional counter. This configuration results in the background levels being high enough that they interfere with the analysis of low level sulfur content. This new sulfur analyzer has adopted wavelength-dispersive optics in a low power, bench-top spectrometer. This single element system has optimized optics for the sulfur element line producing a low background and high sensitivity response for sulfur analysis. Tests with the analyzer showed that concentration levels of 1ppm sulfur in fuel oil were able to be routinely analyzed. Although this sulfur analyzer is equipped with only one fixed goniometer, it has two channels, one for the sulfur signal and a second channel for the background signal. This feature allows the system to conform to the regulations of ASTM D2622 and ISO20884. Other benefits are that XRF analysis does not use flame for analysis and requires less sample preparation compared with Oxidative Microcoulometry or Ultraviolet Fluorescence analysis.

Abstract # 065 – 2:00 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Chromeleon Software Development Kit (SDK) Can Enhance Screen Views and Third Party Software Interface Capabilities"

Larry G. West, Dionex Corporation

The Chromeleon Software Development Kit (SDK) has been used to allow Lab Personnel more simplified screen views for sample entry into an Analytical QC Lab. Functioning screens from a Customer's Lab will be shown and the degree of Visual Basic scripting will be discussed. The SDK was also used to setup a seamless interface to Customer's Laboratory Information Management System (LIMS). This LIMS interface will also be discussed in this presentation. Lab Efficiency Productivity increases will be discussed in this paper.

Abstract # 066 – 10:45 AM - 20 minutes - Bluebonnet/Orchid - Wednesday
"Peak Template Matching with Constraint Expressions for GCxGC"

Qingping Tao and Stephen E. Reichenbach - GC Image LLC

Comprehensive two-dimensional gas chromatography (GCxGC) analyses aim to separate, quantify, and identify specific chemical constituents in samples. Complex chemical samples may generate thousands of peaks in GCxGC data. Peak template matching can be used to automatically identify chemicals in a sample based on previously observed and identified chromatographic patterns of chemical peaks. Templates consisting of peaks defined by two-dimensional retention times can be augmented with constraints on the mass spectrum or other peak features, e.g., with the Computer Language for Chemical Identification (CLIC). The combination of chromatographic retention-time patterns and constraint expressions greatly reduces ambiguous identifications and speeds automated processing.

Abstract # 067 – 2:00 PM - 25 minutes - Floral Hall A 2 - Tuesday
"Dynamic Reflux Sampling for Challenging Process Sample Locations"

Tracy Dye - ABB Inc. Analytical

One of the most difficult challenges in the field of Process Analytical Chemistry has long been obtaining representative and consistent samples. Process analyzer measurements used for process control often involve high temperature, particulate laden, corrosive and otherwise nasty sample take-off points. Process examples include ethylene furnace effluent, ammonia reactor plants, catalytic cracking, alkylation and stack emission. Various approaches have been taken to address these sampling challenges including, for example, in-situ optical measurement. However, even this type of solution eventually encounters problems such as optical window clouding. Dynamic Reflux Sampling has proven to be a successful technique for solving the aforementioned challenges and the DRS2170 is one such example. The DRS2170 uses precise temperature control and an unmatched ability to remove entrained water, insoluble solids and high boiling impurities. The result is an exceptionally high flow rate of representative dry process gas sample void of various unwanted substances that can interfere with the desired measured components, clog valves and inlets, and cloud optical windows.

Abstract # 068 – 2:00 PM – Poster Presentation - Exhibit Hall - Wednesday
"Calibration, Validation and Control of the Karl Fischer Analysis, Water Standard selection"

Doug Clark - Sigma-Aldrich Corporation

The Karl Fischer titration is one of the most widely used methods for determining water content. While improvements in reagents and instrumentation have greatly increased the reliability and accuracy of the method, one area remains unchanged, the need for calibration, validation and control. Traditionally the standard of choice for this task has been pure water. However, the use of pure water presents a problem, accurately delivering very small quantities. This paper discusses the importance of sample size and its influence on standard selection. Various manufactured standards for Volumetric, Coulometric, and the Karl Fischer Oven will be discussed. In addition, the use of standards for verification of results will also be covered.

Abstract # 069 – 4:00 PM - 30 minutes - Floral Hall A 2 - Wednesday
"Advancements in the Use of Tunable Diode Laser Analyzers for On-Line Process Measurements"

Al Kania, Sam Miller - SpectraSensors

The tools available for performing on-line compositional measurements continue to grow as analytical techniques evolve and expand in capabilities. One of the newest tools available are analyzers based on Tunable Diode Laser (TDL) spectroscopy that bring a whole new level of power yet simplicity. This paper will discuss the advancements in the use of TDL-based analyzers with specific application examples as well as discussion on the benefits these analyzers bring over traditional measurement techniques.

Abstract # 070 – 3:00 PM - 30 minutes - Hibiscus/Daffodil - Tuesday
"Explore the Wealth of Karl Fischer Knowledge Available at the Click of your Mouse"

Doug Clark - Sigma-Aldrich Corporation

Ever since its inception scientist have been accumulating and sharing their knowledge regarding Karl Fischer. This sharing has evolved much like the method itself. Today there is a comprehensive Multimedia Guide that incorporates applications, background theory, and helpful tips. Instructional videos illustrate many of the topics covered.

Abstract # 071 – 3:30 PM - 30 minutes - Hibiscus/Daffodil - Wednesday
"Finally, something useful from the IT department."

Brian Rohrback, Shelley Begley and Phil Bartley - Infometrix, Inc. and Agilent Technologies, Inc.

A series of microwave analyzers have been pulled from service troubleshooting the computer network highways and byways and adapted to suit the requirements of process monitoring. The adaptation is strictly software and

makes the measurement independent of impedance, allowing an automated signal interpretation using off-the-shelf chemometrics software. The result is an extremely fast, sensitive instrument that avoids many of the pitfalls of near-infrared spectroscopy. Product classification and performance measurements can be done in opaque liquids and solids without contacting the sample.

Abstract # 072 - 9:30 AM - 30 minutes - Bluebonnet/Orchid - Wednesday
"GC x GC: How it Works; Why We Need It"

Edward B. Ledford, Jr. - Zoex Corporation
GC x GC is widely regarded as an "exotic" research tool. This perception arises from the fact that any new technology will make its first mark in the research community. An increasing number of users employ GC x GC in service analysis and QA/QC settings - industrial strength applications that improve the cost-effectiveness of analytical operations. In order to reap the advantages of GC x GC, one must appreciate how it works and why it provides such great advantages over conventional 1DGC analysis. This presentation will describe how GC x GC instruments operate, what they look like, why GC x GC images are easier to interpret than conventional chromatograms, and how GC x GC can simultaneously improve analysis and cut costs in production settings.

Abstract # 073 - 1:30 PM - Poster Presentation - Exhibit Hall - Wednesday
"Improved Safety and Performance of the Volumetric Karl Fischer Analysis of Aldehydes and Ketones"

Doug Clark - Sigma-Aldrich Corporation
Karl Fischer titration is a universally accepted method for measuring the water content in a broad range of compounds including chemicals, oils, pharmaceuticals and foods. Invariably there will be compounds that interfere with the normal titration. Aldehydes and Ketones are two such compounds. Due to their reaction with methanol, which is a common component of most Karl Fischer reagents, Aldehydes and Ketones require special methanol free reagents. The Gold Standard for Methanol Free reagents has been the HYDRANAL Working Medium K. In an effort to improve the safety and performance of the analysis, a new Methanol Free reagent has been introduced. The new Medium K reagent will be compared to the HYDRANAL Working Medium K using various Aldehydes and Ketones.

Abstract # 074 - 10:00 AM - 30 minutes - Bluebonnet/Orchid - Wednesday
"Multiple ASTM Methods with a Single GC x GC Instrument"

Edward B. Ledford, Jr. - Zoex Corporation
GC x GC not only separates large numbers of compounds known to coelute in conventional 1D-GC analysis, but 'organizes' them into logical groupings in GC x GC images indicative of compound class and isomerism. Because many of the target compounds groups specified by ASTM methods are separated by a single GC x GC instrument, sometimes in a single run, it is possible to establish equivalency between a single GC x GC method and a multiplicity of ASTM methods. This paper will compare GC x GC to two ASTM methods, D5580 (BTEX and higher aromatics in gasoline), and D4815 (Oxygenates in gasoline) to illustrate 'multi-method equivalence'. The cost-effectiveness of GC x GC 'multi-methods' will be addressed.

Abstract # 075 - 1:30 PM - Poster Presentation - Exhibit Hall - Wednesday
"New Method for Fuel Oxygenates by Headspace Sampling"

Brian Bertsch, Tom Szakas - Teledyne Tekmar
In the past, classical Headspace methods have been challenged with oxygenated compounds. A new headspace sampler has been developed for the testing of such samples while offering unprecedented low-end detection. By incorporating EPA approved trapping techniques, the HT3 Headspace sampler is now capable of offering purge & trap analytic performance. This poster will describe the methodology and present sub ppb MDLs for most of the Method 8260 compound list.

Abstract # 076 - 2:30 PM - Poster Presentation - Exhibit Hall - Wednesday
"Static and Dynamic Headspace Analysis for Volatile Organic Compounds"

Brian Bertsch, Tom Szakas - Teledyne Tekmar
The EPA requires testing of soil and water for benzene, toluene, ethylbenzene and xylenes (BTEX) as well as other gas range organic (GRO) compounds. To prevent damage to your Purge and Trap system, it is recommended to screen the sample with a headspace sampler. Until now, a headspace sampler would indicate high levels of volatile organic compounds and allow the user to adjust accordingly before rerunning the sample again on their Purge and Trap system. With the novel design of the HT3 Headspace Autosampler, the laboratory is now able to run the sample and achieve reportable data.

Abstract # 077 - 2:00 PM - Poster Presentation - Exhibit Hall - Wednesday
"Using Purge & Trap with GCMS for MTBE Investigation in Water"

Brian Bertsch, Tom Szakas - Teledyne Tekmar
The addition of methyl tertiary-butyl ether, MTBE, has many positive effects on the combustive properties of gasoline. Increased levels of MTBE in groundwater is being noticed and the EPA is mandating the testing of this possible carcinogenic compound. A method utilizing the Velocity XPT Purge and Trap system with the Aquatek autoloader has been optimized to run water samples looking for MTBE and other compounds of interest. The data presented will compare the results against the expected EPA guidelines demonstrating superior precision and accuracy.

Abstract # 078 - 10:30 AM - Poster Presentation - Exhibit Hall - Wednesday
"Determination of Total Cyanide Without Distillation"

William Lipps - O.I Analytical
Determination of total cyanide by normal EPA methodology requires either manual or on-line distillation from a sample acidified with a strong acid.

Serious problems have been recognized with these traditional methods. This poster presents interferences associated with EPA approved methods and describes a non distillation method based on segmented flow on-line UV digestion-gas diffusion with amperometric detection. This technique eliminates the need for time-consuming distillations, has a throughput of up to 30 samples per hour, and is virtually interference free.

Abstract # 079 - 3:45 PM - 20 minutes - Iris - Wednesday
"Pore Size Measurements of Sand Screens by Challenge Testing"

Dr Graham Rideal, Jamie Storey - Whitehouse Scientific Ltd
A new range of narrow particle size distribution standards has been prepared for measuring the pore sizes of filter media using the Challenge Test method. In order to permeate the complex, 3 dimensional woven structures of sand screens a unique sonic sifting method have been devised. The cut points of the sand screens can be measured in about 2 minutes and the results are traceable to international standards such as NIST. As an extension of the technique, recovered micro spheres from within the meshes reflect fine detail in the distribution of pore sizes.

Abstract # 080 - 10:45 AM - 20 minutes - Floral Hall A 2 - Wednesday
"Simultaneous Speciation Of Sulfur Compounds By Families And Simulated Distillation Analysis Utilizing Dual Plasma Chemiluminescence And Flame Ionization Detectors"

Joaquin A Lubkowitz, Ph.D, Juan Carlos Moreno, Steve P. Elliot, Separation Systems - Randy L. Shearer, GE Analytical Instruments Inc.
It is necessary to identify the sulfur compounds contained in fuel streams obtained from refining crude oil in order to optimize the operational refining conditions so as to minimize the presence of sulfur compounds. This results in our increased knowledge of the transformation of different sulfur species. This work presents the results of carrying out pseudo-speciation of sulfur families and carrying out simulated distillation by utilizing a 30meter capillary column. The relevance of this work lies in the fact that one can obtain simultaneously the carbon distillation curves (FID) and the sulfur distillation curves (SCD-Dual Plasma Burner) by utilizing the detectors in series. The column used has a higher column resolution than those used typically in simulated distillation but the compromise lies in the fact that speciation of some sulfur compounds can be obtained with the use of the detectors in series. This technique was used for the analysis gasoline, diesel and gas oils. The results show a good agreement with the boiling point distribution curves obtained by using conventional ASTM D 2887 distillation. In addition, this higher resolving column helped in classifying such sulfur compounds as thiophenes, benzothiophenes, dibenzothiophene as well as the alkylated species.

Abstract # 081 - 1:00 PM - 30 minutes - Bluebonnet/Orchid - Wednesday
"Application of Comprehensive Two-Dimensional Gas Chromatography to the Hydrocarbon Type Analysis (PNA) of Middle Distillates"

Andrea Cadoppi, Daniela Cavagnino, Giacinto Zilloli - ThermoElectron
The compositional analysis of middle distillates (kerosene, diesel and jet fuels) is becoming more and more important, as an analytical tool, to assist the blending process of refining industries in achieving a final product that comply with environmental regulations from one side and engine specifications, with the other. These fractions (boiling points between 150-370°C) contain, in spite of a limited number of classes of compounds, an enormous number of isomers such that a single column is not able to provide a complete characterization and more complex multidimensional techniques are needed. Usually a pre-separation of groups is achieved by liquid chromatography and then the collected fractions are separated on a GC column. Comprehensive gas chromatography (GCxGC) has been proved to be a powerful tool for a comprehensive characterization of complex hydrocarbon mixtures thanks to the orthogonal nature of this separation technique when two columns of different polarity are used. The use of the GCxGC as an alternative technique is proposed in this application considering the advantages it delivers in terms of reduced analysis time and sample consumption in addition to a simple instrument set-up and operation. For this purpose, a dedicated analytical method has been implemented in the HyperChrom data system (Thermo Electron) with compounds divided in 188 subgroups from C7 to C30. A detailed group type report is generated along with distribution diagrams for 10 different classes. Quantitative results will be shown in comparison with conventional methods.

Abstract # 082 - 4:00 PM - 45 minutes - Bluebonnet/Orchid - Tuesday
"Novel Injection Technique For The Quantitative Analysis Of Viscous Liquids And Solids"

Bob Freeman and Terry Wilks - Quantum Analytics
This workshop introduces a novel injection technique for the GC/MS analysis of viscous liquids and solids. The analytical protocol employs the Frontier multi-functional pyrolyzer in a variety of different operating modes. Evolved gas analysis (EGA) is used to characterize the sample and provide guidance on how best to further analyze the sample. Factors influencing precision and accuracy will be discussed. The power of quantitative pyrolysis to provide detailed analysis will be demonstrated.

Abstract # 083 - 3:00 PM - 30 minutes - Bluebonnet/Orchid - Wednesday
"Enhancing the Power of the GCxGC-TOFMS Analysis through Data Processing Using Classifications and Scripting Software"

Tincuta Veriotti, Don Hilton - LECO Corporation
The use of comprehensive two-dimensional gas chromatography (GCxGC) has tremendously increased the separation power of the chromatographic systems. More peaks can be separated and more analytes can be identified in a single chromatographic run. The highly structured chromatograms generated with GCxGC technology are another step forward in solving the puzzle generated by the analysis of complex sample mixtures. The

combination of mass spectrometry and GCxGC technology adds one more dimension to the separation power. To fully take advantage of this additional benefit, software algorithms are used to allow peak classification based on both retention times and spectral information. This experiment describes the benefits obtained from processing GCxGC-TOFMS data with classifications and mass spectral filters.

Abstract # 084 - 2:00 PM - 30 minutes - Iris - Tuesday

"High Speed Refinery Gas Analysis"

Richard Addonizio, Christopher Rust, Edward J. Zachowski - Alpha Omega Technologies, Inc.

A typical refinery gas application calls for the analysis of hydrogen, C1 through C8 hydrocarbons, carbon monoxide, carbon dioxide, hydrogen sulfide, oxygen, and nitrogen. Since the arrival of micro-GC technologies, outstanding reductions in the analysis run time, to approximately 60 seconds, are now possible. However, these achievements have not been delivered without compromise: a general lack of flexibility in methodology and field serviceability of analyzers, have been basic complaints among some users of the new micro GC technology. A new type of High Speed Refinery Gas Analyzer (HSRGA), which addresses these issues, is discussed. The patented modular design delivers HSRGA with a flexible methodology that adapts to a broad range of sample matrices - without compromising resolution or sensitivity. Additionally, the ability to accept liquid samples, perform an extended analysis for C8 and H2S with only slight increases in run time, and easy field serviceability of units - all running off a conventional GC oven - make this a "Back to the Future" type of technology.

Abstract # 085 - 4:00 PM - 30 minutes - Hibiscus/Daffodil - Wednesday

"Take Your Knowledge Off The Lab Bookshelf - Waters Electronic Laboratory Notebook Software"

Brian Morrisroe - Waters Corporation

The Waters eLab Notebook Software allows companies to digitally capture and store scientific information - graphical, mathematical, and textual information of all types - that, today, researchers enter manually into paper laboratory notebooks. Electronically-saved information increases in value as it becomes more traceable and accessible to scientists across an organization. The ELN will play a major part in IP protection for the lab in years to come.

Abstract # 086 - 3:00 PM - 30 minutes - Iris - Tuesday

"New Capillary Columns for Fast Trans and Omega 3 & 6 Fatty Analyses"

L.M. Sidisky, K.K. Stenerson, G.A. Baney - Supelco

The analysis of the trans and the omega 3 and 6 fatty acid content of food products has been a very active area of research for many food companies in the past few years due to changes in the nutritional labeling laws and the consumer's desire to have "healthier fat" in their diet. Trans fatty acids are currently being noted as being a bad fat to have in a diet as studies have linked their nutritional contribution to be similar to saturated fats and possibly playing a role in coronary heart disease. The Omega 3 & 6 fatty acids are important as increased consumption of Omega 3 fatty acids has been linked with reducing coronary heart disease along with their importance in the brain development in babies. Studies have also indicated there is a need to have a better balance in the Omega 3 and Omega 6 ratios in the average American diet. The analysis of food products containing the trans and omega 3 and 6 fatty acids are typically performed on two different selectivity capillary columns. Current methodology for analyzing trans fatty acid according to AOAC Method 996.06 requires the fatty acids be separated as fatty acid methyl esters (FAMES) on a highly polar SP-2560, 100-meter long capillary column. This analysis is expensive due to the length of the capillary column and requires long analysis times to resolve the methyl esters. Omega 3 and 6 fatty acids are routinely analyzed according to AOAC Method 991.39 using a 30-meter long polar Supelcowax 10 capillary column. The analysis is complex and requires approximately 30 to 40 minutes to complete. Recently we have developed two new capillary columns to reduce the analysis time required to perform both the trans Fatty and Omega 3 & 6 Fatty analysis. Both products are shorter length, narrower internal diameter versions of the 0.25mm ID columns currently being used. By reducing the length and internal diameter of the columns we are able to perform the analysis in a significantly reduced analysis time while retaining the resolution of the Fatty isomers. We will demonstrate the performance of these new columns with a series of analyses of various fatty acid containing samples.

Abstract # 087 - 9:30 AM - 2 hrs - Hibiscus/Daffodil - Wednesday

"GCC 2005 Ion Analysis Discussion Group"

Kirk Chassaniol - Dionex

Conference attendees with an interest in Ion Chromatography are invited to attend this year's meeting while attending the conference. This session will be comprised of presentations by vendors and practitioners on new products and applications and should provide a room full of experts to assist in your IC methods. Topics for discussion prior to meeting are welcome by sending an e-mail to: kirk.chassaniol@dionex.com

Abstract # 088 - 1:30 PM - 20 minutes - Bluebonnet/Orchid - Wednesday

"UltraFast GC Method for the Analysis of Total Petroleum Hydrocarbons in Water and Soils, in Compliance with Texas TNRCC 1005"

Andrea Cadoppi, Daniela Cavagnino, Riccardo Facchetti, Stefano Pelagatti - Thermo Electron

As attested by an EPA survey, starting from 20 years ago, hundreds of thousands of underground storage tanks leaking petroleum have worldwide contaminated community drinking water supplies. Recent legislations regulating both drinking water suppliers and environmental protection institutes of many European and US countries, have made the determination of the content of mineral oils and petroleum products in water and soils a

compulsory requirement for quality certifications. Currently, the analytical techniques used to carry out this determination are Infra Red and GC. IR implies the mandatory use of CCl4 or Freon as an extraction solvent, currently banned due to their tremendous impact on the environment. People skilled in the art of this technique have been strongly invited to urgently provide a solution, but all the solvent alternatives tested up to now, like Tetrachloroethylene (TTCE), have been rejected by official regulations due to suspected carcinogenic properties. In this light, GC-FID, featuring no limitations in the solvent selection, emerges as the only analytical technique tolerated and supported by official norms for total petroleum hydrocarbons applications. One of these norms, the method 1005 from the Texas Natural Resource Conservation Commission (TNRCC), is widely applied not only in Texas but throughout US. This is based on samples extraction with n-pentane and FID monitoring of the hydrocarbons range from C6 to C36. The present lecture shows the details of a new ultra fast GC method for TPH, able to reliably cover such a wide range of hydrocarbons and to deliver a high degree of sensitivity, as requested by the Texas TNRCC 1005.

Abstract # 089 - 10:00 AM - Poster Presentation - Exhibit Hall - Wednesday

"Volatile Petroleum Hydrocarbons by Purge and Trap"

Laura Chambers, Michael L. Duffy - OI Analytical

In January of 1998 the Massachusetts Department of Environmental Protection (MADEP) promulgated a new method for analysis of Volatile Petroleum Hydrocarbons (VPH) in soil and groundwater contaminated by petroleum spills. The implementation date for the final revision of the method was July 1, 2004. The Massachusetts VPH method is a P&T/GC/PID/FID procedure whereby the collective concentrations of aliphatic (C5-C8 and C9-C12) and aromatic (C9-C10) hydrocarbons are identified and quantitated, along with individual concentrations of benzene, toluene, ethylbenzene, xylenes, methyl-tert-butylether, and naphthalene. Soil samples are initially extracted with methanol, then a measured aliquot of the extract is added to water and purged onto an adsorbent bed using a P&T sample concentrator. One difficulty with the procedure is the high level of methanol from the extraction procedure that can sometimes interfere with the analysis. This poster will describe analytical conditions that minimize the methanol interference and produce data that meet all quality control criteria for this performance based method. Complete instrument operating parameters will be presented for the purge and trap, GC, and tandem PID-FID. Chromatography, calibrations, and other performance data will also be shown.

Abstract # 090 - 2:30 PM - Poster Presentation - Exhibit Hall - Wednesday

"The Use of Tandem Quadrupole GC/MS/MS for the Selective Identification of Sterane Biomarkers in Crude Oils as Age and Facies Diagnostic Indicators"

Thomas Hubbell, David Douce, Tim Jenkins, Stephanie N. Dudd, Hans Peter Nytoft, Peter Abolins and Awang Sapawi Awang Jamil - Waters Corporation

Biomarkers in an oil can reveal the age of the source rock, the environment of deposition and the thermal maturity of the source rock during generation. Gas Chromatography/Mass Spectrometry (GC/MS) has been the principal method used to identify sterane isomers (known biomarkers). Selective Ion Recording of the 217Da fragment ion is used to identify the steranes of interest. However, this type of analysis is prone to interferences from other families of compounds found in rock oil extracts. Through the use of a Quattro Micro GC tandem quadrupole instrument (GC/MS/MS) in Multiple Reaction Monitoring mode, a significant improvement in sensitivity and selectivity is achieved.

Abstract # 091 - 1:30 PM - 30 minutes - Iris - Wednesday

"Ultra Performance Liquid Chromatography™: An Introduction and Review"

Larry Meeker, Jeremy Harbin, Thomas Hubbell - Waters Corporation

Ultra performance liquid chromatography (UPLC™) takes advantage of technological strides made in particle chemistry performance, system optimization, detector design, and data processing and control. Using sub-2 µm particles and mobile phases at high linear velocities, and instrumentation that operates at higher pressures than those used in HPLC, dramatic increases in resolution, sensitivity, and speed of analysis can be obtained. This new category of analytical separation science retains the practicality and principles of HPLC while creating a step-function improvement in chromatographic performance. This review introduces the theory of UPLC™, and summarizes some of the most recent work in the field.

Abstract # 092 - 3:30 PM - Poster Presentation - Exhibit Hall - Wednesday

"Development of a New Low Bleed Column for GC/MS Analysis"

L. Sidisky, Y. Ni, G. Baney, K. Stenerson - Supelco

GC/MS analysis requires the use of a column with the lowest possible bleed. Columns exhibiting high bleed may interfere with proper spectral identification of analytes and can contaminate the ion source, which then leads to more frequent system maintenance, thus resulting in increased down time. Traditional methyl phenyl silicone based polymers are structured such that the phenyl substituent is positioned as a pendent group along the polymer chain. As an alternative, silphenylene polymers incorporate the phenyl group into the backbone structure. This increases the stability of the polymer by sterically hindering the "backbiting" reaction that leads to the formation of small cyclic siloxane molecules that contribute to column bleed. We have developed a low-bleed column for GC/MS use that incorporates a combination of silphenylene polymer synthesis, a proprietary surface deactivation chemistry, functionalization that chemically bonds the stationary phase to the fused silica column wall, and an innovative manufacturing processes. The result is a column with minimal MS bleed that is stable for extended periods at its maximum operating temperature. Data pertaining to the column's inertness, bleed characteristics, durability and suitability for several key GC/MS applications will be presented. Specific applications will include semivolatiles by US EPA method 8270, dioxins, and polybrominated diphenyl ether analysis.

Abstract # 093 – 3:00 PM – Poster Presentation - Exhibit Hall - Wednesday
“Increased Performance of Glass Thermal Desorption Tubes Using a Glass-sintered Frit”

Jamie L. Brown, Leonard M. Sidisky, J. Mark Sinclair - Supelco
Glass tubes used for thermal desorption applications have typically been prepared by sandwiching the adsorbent packing between two layers of glass wool. The glass wool plugs have been known to shift and causing voids in the packed bed or totally blowing out of the tube and contaminating the thermal desorption unit if they are not properly secured in the tube. A new version of a glass thermal desorption tube has been developed that incorporates the use of a glass-sintered frit in the inlet of the tube as opposed to using just glass wool. Using a glass-sintered frit in the inlet of a tube provides several advantages. The glass frit will assure the adsorbent is always in the heated zone of the thermal desorber. Using a fritted glass tube will provide more consistent backpressures of the tube, with the result being improved reproducibility in both the sampling and the analysis of the tube. The glass frit maintains the inert characteristics associated with glass. The fritted glass tube extends the serviceable life of the adsorbent tube by preventing the adsorbent(s) from blowing out the ends, or shifting during use. An empty glass fritted tube can also provide an enhanced means of placing solid samples into the tube for analysis. The glass frit will prevent the solid sample from escaping from the inlet during analysis, which otherwise could contaminate the thermal desorber. We will demonstrate applications comparing the performance of the fritted glass thermal tube versus traditional wool enclosed tubes along with stainless steel thermal desorption.

Abstract # 094 – 4:00 PM – Poster Presentation - Exhibit Hall - Wednesday
“Low Background and Low Pressure Drop DNPH Cartridges for Trace Level Sampling of Carbonyl Compounds”

J.L.Desorcie, L.M.Sidisky, K. Schultz, M.V. Robillard - Supelco
Aldehydes and other volatile organic pollutants are commonly emitted from construction materials and are important contributors to sick building syndrome. To measure these emissions, volatile aldehydes and ketones are collected and converted to hydrazones using a sampling cartridge containing acidified 2,4-dinitrophenylhydrazine (DNPH) coated on a silica support. The hydrazones are removed from the cartridge by solvent desorption and analyzed by HPLC. In this paper we describe a new DNPH sampling tube with consistently low carbonyl background and low pressure drop. These properties were designed into the cartridge to permit accurate sampling and measurement of carbonyl compounds while preserving the battery power of portable personal sampling pumps. The cartridges possess Luer lock fittings to provide secure connections for applications where multiple cartridges are utilized in series. Background impurity data will be presented for freshly prepared and aged cartridges. In addition to real-time aging studies, accelerated aging experiments carried out at elevated temperatures were used to evaluate polypropylene cartridge body materials for carbonyl-containing impurities. The physical design of the cartridge will be described in terms of its impact on air flow and pressure drop. The use of acetonitrile-water mixtures to extract the hydrazones from the cartridges allows larger HPLC injections to be carried out while maintaining excellent peak shape in the HPLC separation. This greatly improves the sensitivity of the technique.

Abstract # 095 – 1:30 PM – Poster Presentation - Exhibit Hall - Wednesday
“New Method of The Analysis of Water Samples for Gasoline Contamination”

S. J. Harrison and P. Smith - Leap Technologies
The analysis of water samples for hydrocarbon contamination is important for both human health and environmental reasons. These analyses have traditionally been carried out using purge and trap, as static headspace methods tend to be relatively insensitive. However the purge and trap system can be complex to convert back to running liquid samples. In this paper we show a new type of static headspace which is more sensitive than traditional headspace. Sample of water were contaminated with differing amounts of gasoline and then analyzed.

Abstract# 96 - 10:00 AM - 30 minutes - Floral Hall A 2 - Wednesday
“Analysis of Sulfur in Ethanol by Potentiometric Titration”

Tore Fossum - Mettler Toledo, Inc.
Reducing sulfur in fuel has become very important for reducing acid rain and air pollution. Sulfur may be present in fuel ethanol. In this work, sulfur was determined using a lead sulfide pellet specific ion electrode and lead nitrate titrant in fuel ethanol. The electrode minimizes interference by acetic acid, which is used to acidify the fuel ethanol sample. A Mettler Toledo DL58 titrator was used to get clear, well defined titration curves. Data is presented using two other electrodes for comparison. The titration procedure follows the proposed ASTM method based on the titration of sulfate in surfactants, D6174.

Abstract # 097 - 9:00 AM - 120 minutes - Iris - Thursday
“Optimizing Titrations in the Petrochemical Laboratory”

Tore Fossum - Mettler Toledo, Inc.
Titration is used for a variety of analyses in the petrochemical laboratory. This workshop presents techniques and methods which have worked for the following analyses: Acid numbers and base numbers of petroleum products Mercaptans and sulfides in petroleum products Sulfur in caustic treating solutions Sulfur and acid gas loading in amine scrubber solutions Bromine number of hydrocarbons Bromine index of hydrocarbons Chloride in methanol Time is included for questions and discussion.

Abstract # 098 – 3:30 PM – Poster Presentation - Exhibit Hall - Wednesday
“Rapid and Automated Identification of Components in Petroleum Based Samples”

Scott J Campbell - SpectralWorks Ltd
Analytical science has changed over the recent years, as instrument technology has improved it has become possible to detect lower and lower levels of compounds and separate more and more complex mixtures. This has led to a shift away from the analysis of a few target analytes in a sample to the desire to identify all the analytes in a sample. This approach however moves the bottle neck to data processing. In this paper we show the analysis of a petroleum based sample using new algorithm to enable the rapid and automated identification of components in the sample.

Abstract # 099 – 2:30 PM – Poster Presentation - Exhibit Hall - Wednesday
“A Novel Differential Mobility Type Detector for the Analysis of Trace Level Sulfur Compounds in Hydrocarbon Matrices”

Bob Belair; Paul van den Engel - Varian, Inc.
The ability to determine the presence of sulfur at extremely low levels can be highly problematic due to matrix interferences. The CP-4900 Micro GC has been successfully coupled with a miniaturized differential mobility detector to provide straightforward analysis of multiple trace level sulfur components in complex matrices with no matrix interferences and routine detection levels well below 100 ppb. An overview of the technology will be provided and samples related to the hydrocarbon processing industry will be discussed.

Abstract # 100 - 11:30 AM - 30 minutes - Floral Hall A 2 - Wednesday
“Sulfur GC Applications using the SCD/FID Adapter”

R. L. Shearer - GE Analytical Instruments
Development of the Dual Plasma SCD (Sulfur Chemiluminescence Detector) has led to many improvements in sulfur analysis by GC SCD. A new FID (Flame Ionization Detector) adapter, for example, creates a more stable FID flame by channeling gases over and around the igniter of the FID. The new flow profile improves the ability of the sulfur detector to handle carbon disulfide for use with heavy petroleum sample types. All of these design improvements lead to an extremely robust system and extend the useful operating range of sulfur simulated distillation, with excellent sensitivity, selectivity and linearity. In addition, the Dual Plasma SCD allows the use of a wider bore restrictor in the FID enabling the detector to handle greater amounts of column bleed and, subsequently, higher column temperatures. This wider bore also allows a greater fraction of the FID exhaust to be sampled, thus improving sulfur sensitivity. Examples using this methodology will focus on the extension of sulfur simulated distillation, but other applications taking advantage of simultaneous sulfur and hydrocarbon detection will be discussed.

Abstract # 101 - 3:30 PM - 30 minutes - Bluebonnet/Orchid - Wednesday
“The Separation of C2-Naphthalenes by Gas Chromatography x Fourier Transform Infrared Spectroscopy (GCxFTIR): A Two-Dimensional Separation Approach”

Frank Cheng-Yu Wang*, Kathleen E. Edwards - ExxonMobil Research and Engineering Company
Separation of a C2-Naphthalene mixture has been accomplished by Gas Chromatography X Fourier Transform Infrared Spectroscopy (GCxFTIR). In addition to Gas Chromatography (GC) separation, the FTIR has also played an important role in the separation as well as its traditional role of detection and identification. A two-dimensional separation has been achieved utilizing the FTIR as a separation tool in the GC and FTIR hyphenation. This two-dimensional separation approach makes the separation of C2-Naphthalenes much easier than the traditional GC-only approach. The details of this two-dimensional separation have been discussed as well as the advantages and disadvantages compared with traditional GC. The qualitative and quantitative analysis aspect of this approach have also been discussed. From GCxGC through GCxMS to GCxFTIR, the power of a two (multiple) dimensional separation has gradually exposed its advantages for complex mixture characterization. In this continuous two (multiple) dimensional separation development journey, there are still many challenges needed to be overcome. The GCxFTIR experience has pushed this effort one step ahead towards the complete application of this new concept in the analysis of complex mixtures.

Abstract # 102 – 11:00 AM – Poster Presentation - Exhibit Hall - Wednesday
“Analysis of Complex Mixtures by Fast GC-TOFMS using Low Thermal Mass Technology”

Mark Libardoni - LECO Corporation
Increasing demands for higher sample throughput are beginning to focus more attention on the development of high-speed gas chromatograph (HSGC) systems. More recently, the use of Low Thermal Mass (LTM) columns mounted outside the GC oven have eliminated the temperature ramping limitations associated with commercial GC ovens. With spectral acquisition rates as high as 500 spectra/sec, the focused peaks often associated with HSGC can be easily detected by the Pegasus III TOFMS. Acquiring spectra across a wide mass range provides spectral deconvolution even for components with minimal resolution. In addition to the theory of HSGC, complex samples such as petroleum and essential oils analyzed by HSGC using LTM technology combined with a LECO Pegasus III TOFMS detector will be presented.

Abstract # 103 – 2:00 PM – Poster Presentation - Exhibit Hall - Wednesday
“A New Approach for Hydrocarbon Group Type Analysis (ASTM 6839) Using Multi-dimensional Gas Chromatography”

Bob Belair, Hans van den Heuvel, Paul van den Engel - Varian, Inc
Since the first description of PNA analysis in the 80's, the technique has undergone many changes and improvements. Recently developments in heating techniques and connection devices have enabled the development of

a new analyzer that meets or exceeds the ASTM D6839 while providing unprecedented levels of operational simplicity and straightforward maintenance. Additionally, sample loading and lifetimes have been increased including olefin loading. An overview of the system design concepts will be presented including performance data for a different hydrocarbon sample types.

Abstract # 104 - 10:30 AM - 20 minutes - Iris - Wednesday

"DCG: Setting the Standard in Standards"

Ashley Wolfe - DCG Partnership 1, Ltd.

In an industry where price is a key factor, and sometimes the only factor, when determining where to buy calibration standards, it is becoming more and more essential for companies to think about how much of their business relies on the accuracy and quality of its standards. In the following presentation, you will learn that quality is not limited to the number on the certificate but should be incorporated in every step of the blending process as well. This presentation will prepare its viewers with the proper questions to ask standards manufacturers to ensure that they are receiving the most accurate and dependable standard available.

Abstract# 105 - 3:00 PM - 20 minutes - Bluebonnet/Orchid - Tuesday

"Gas Chromatographic Techniques for the Rapid Analysis of Used Engine Oil"

Andrew Tipler, Timothy D. Ruppel, Gerald Hall and David Hillgoss - PerkinElmer Life and Analytical Sciences

Large engines (e.g. marine engines) require thousands of gallons of lubricating oil in order to run. During use, this oil may become contaminated with fluids from the fuel or cooling systems, thus reducing the efficacy of that oil. It is important to identify the exact moment at which the oil is no longer viable and have the means to monitor its quality at regular intervals with fast and cost effective methods. Two such methods using GC are described in this paper. The first method for fuel diluent determinations uses direct injection, by autosampler, of a low volume of the untreated oil sample into a GC. The GC comprises a hot split injector, a short, narrow-bore capillary column and a FID detector. Backflushing removes residual less-volatile sample compounds. The low injection volumes minimize the buildup of soot and other non-volatile material in the injector—1000 analyses were performed before maintenance. Each analysis takes about 4 minutes and has a precision of about 5%. The second method describes the determination of glycols. A sample of oil is introduced into a glass vial and an in situ derivatization technique converts the glycols to more volatile compounds that may be chromatographed by GC. A headspace sampling system is used to extract the non-volatile analytes from the oil and transfer them to a GC for analysis. The result is a simple, rapid, high throughput method capable of analyzing hundreds of complex oil matrix samples per day for ethylene glycol and propylene glycol.

Abstract # 106 - 3:30 PM - 30 minutes - Bluebonnet/Orchid - Tuesday

"Novel Technology to Enhance the Performance and Reliability of Thermal Desorption - Gas Chromatographic Analyses"

Andrew Tipler - PerkinElmer Life and Analytical Sciences

Automated thermal desorption (ATD) has become a popular instrumental technique for the analysis of a wide range of atmospheres, vapors and gases from a variety of sources. Since its invention about 25 years ago, ATD technology has undergone many enhancements to improve its performance and widen its application. In this paper, we describe a range of novel technical enhancements developed to enhance the technique still further: 1) Technology has been developed to measure the pneumatic impedance of sample tubes and the secondary trap in order to check on the integrity of the adsorbent packing within them. 2) A further technique to check the integrity of samples is the automatic addition of a check standard to the conditioned sample tube prior to taking the sample. A second check standard may be added to the same tube extemporaneous to analysis to provide a ratio-metric measure of sample integrity. 3) In some instances it is necessary to retain a fraction of the original sample after analysis to enable re-analysis. A simple approach to sample recollection onto the original or a different tube is shown. 4) Technology has been adopted that uses offset vent and desorption flow ports in both the sample tube and the secondary trap to improve the efficacy of dry purging to eliminate water introduced into the ATD with the sample. Details of these new technologies and examples of their application will be presented.

Abstract # 107 - 1:45 PM - 30 minutes - Bluebonnet/Orchid - Wednesday

"A Concept of Ultra Fast GC Separation"

Bill Winniford, Kefu Sun, Dave McCrery, James Griffith and Jim Luong, The Dow Chemical Company, Texas, USA

Fast GC increases productivity and is critical to some applications, like online analysis. Most fast GC strategies focus on technology providing fast heating and cooling speed, like commercially available low thermal mass GC. This presentation will discuss a novel concept of performing ultra fast GC separation, which has a very short analytical cycle and does not require fast heating and cooling the GC oven.

Abstract # 108 - 11:15 AM - 30 minutes - Bluebonnet/Orchid - Wednesday

"Wrap-Around in GCxGC - Issue and Solutions"

Kefu Sun, Dave McCrery and Bill Winniford, The Dow Chemical Company, Texas, USA

One of issues in GCxGC analysis is wrap-around, components of interest elute in more than one modulation cycle. An important feature of GCxGC is polarity information provided by retention time on secondary dimension. Due to wrap-around, polarity information of polar GCxGC peaks will not be clear. A practical approach by re-plotting polar GCxGC displays will be discussed to find wrap-around spots in GCxGC contour plots and calculate the second retention time.

Abstract # 109 - 2:15 PM - 30 minutes - Bluebonnet/Orchid - Wednesday

"Use of Fast Low Thermal Mass GC for Comprehensive Two-Dimensional Separation"

James Griffith, Kefu Sun, Bill Winniford and Jim Luong, The Dow Chemical Company, Texas, USA

Fast GC significantly reduces analytical cycle and can increase productivity. Some online GC applications require fast GC to get quick results. However, in some applications, the separation is sacrificed when speeding up the analysis. One approach to enhance the separation power of fast GC is to couple comprehensive two-dimensional separation to fast GC, which can perform two-dimensional separation on the entire sample. This presentation will discuss the use of commercially available low thermal mass GC for fast comprehensive two-dimensional separation, its potentials and limitations.

Abstract # 110 - 4:00 PM - 30 minutes - Jasmine - Tuesday

"Improved TOC Analysis for Salt water and Brine"

Gary Erickson - OI Analytical

Salt levels continue to be the challenge to TOC analysis. Data is presented for an improved method of analysis for: Low-level TOC concentrations in salt matrices ranging from 3% - Brine. Difficult to oxidize compounds in salt matrices ranging from 3% - Brine. Additional discussion for comparison of different Chemical and Combustion techniques as applied to the application and Cost of ownership issues for TOC analyzer for this difficult analysis.

Abstract # 111 - 3:30 PM - 30 minutes - Jasmine - Tuesday

"Parallel Chamber Configuration for High throughput TOC Analysis"

Gary Erickson - OI Analytical

Increased sampling requirements continue to overburden analyzer capabilities. The demand for additional analysis capability has been traditionally resolved through the addition of duplicate systems including support hardware, i.e. autosamplers, and utilities, requiring substantial capitol investment. An innovative approach to TOC analysis utilizing a parallel reaction path configuration supported by an automated peak detection system, has increased sample throughput by 45% in relation to a serial method on a single analyzer.

Abstract # 112 - 9:00 AM - 90 minutes - Hibiscus/Daffodil - Thursday

"Glassware Safety and Handling"

Randall C. Wade and Jim Ramin' - Ramin' Corporation

This presentation focuses on various aspects of increasing safety when dealing with glassware in the laboratory environment. The session intends to educate the users on what to look for in damaged glassware, determination of which glassware is best suited for an application, and common practices in cleaning and care of glassware that can help reduce breakages and accidents in the workplace.

Abstract# 113 - 3:15 PM - 20 minutes - Iris - Wednesday

"Single Position Double Block-and-Bleed Valve Simplifies NeSSI-based Multiple Stream Sampling Systems"

David M. Simko and John J. Wawrowski - Swagelok Company

Cross-stream contamination compromises accuracy and reliability of analyzer systems. Single stream systems can utilize four streams sample, zero and span, and purge. Multiple stream sampling systems and systems measuring multiple constituents are more complex. A double block-and-bleed arrangement is used to eliminate cross-stream contamination. Driven by NeSSI, new technology is available that combines the double block-and-bleed functions into a single valve, compatible with the ASNS/ISA 76.00.02. This paper discusses the design for double block-and-bleed functionality in a single device, response time of the device, and the impact of leak-tight integrity on overall performance.

Abstract # 114 - 10:00 AM - 30 minutes - Iris - Wednesday

"Low-level NOx and NH3 Standards: Analysis and Stability"

Malik Haouchine, Bruce Talbert, Tracey Jacksier - Air Liquide

NOx and NH3 emissions are responsible for various environmental and health problems. NOx is associated with ground-level ozone, acid rain and respiratory problems whereas NH3 can have negative effects on water, plants, soil systems and human health. As a result NOx emissions originating mainly from combustion processes (motor vehicles, utilities) and NH3 emissions from utilities and animal agriculture have been subject to increasing scrutiny from different environmental agencies. In order to help the industry comply with various regulations recently put in place, a precise and reliable measurement system needs to be available. This includes the need for an analyzer, a reliable calibration standard and a proper selection of materials contacting the sample such as tubing, regulators, valves. In order to address these issues, the goal of this study was to evaluate different analyzers for the detection of NOx and NH3, examine the compatibility of different materials with low-level NOx and NH3 and prepare stable low-level NO, NO2 and NH3 standards in commercial cylinders.

Abstract # 115 - 9:30 AM - 20 minutes - Jasmine - Wednesday

"PETRO-QUANT - Optimised Performance With WDXRF In Petrochemistry"

Bob Burton, Kai Behrens, Arnd Bühler - BRUKER AXS INC.

With the development of PETRO-QUANT, a powerful and easy-to-use solution for all hydrocarbon matrices, like lubricants, any kind of fuels, greases, plastics and polymers, Bruker AXS is presenting a unique solution for trace analysis in hydrocarbons based on WDXRF. Specialized strategies for preparation and the measurements of liquid or loose powder samples, new implications on the hardware design are presented. Understanding the physics and transfer this knowledge to a new software, dedicated for trace analysis in petrochemical applications is making trace analysis available for daily routine use, no matter if the analytical tasks need to be norm compliant or flexible for development.

Abstract # 116 - 10:30 AM - 30 minutes - Floral Hall A 2 - Wednesday
"The Detection of Low-level Sulfur Compounds with a SCD and an ASD"
Malik Haouchine, Bruce Talbert, Amandine Gautier, Tracey Jacksier - Air Liquide
For some industries, the level of sulfur impurities in pure gases is an essential parameter. For example, sulfur compounds in olefin feedstock are strong catalytic poisons for the polymerization process; sulfur level in beverage grade CO₂ is also an important impurity. For these industries to comply with regulations and/or to improve their process efficiency, it is crucial to monitor and control the level of these impurities. A variety of detectors using different techniques are commercially available for the detection of low-level sulfur compounds. In this study two detectors were evaluated: the SCD with Dual Plasma™ technology from Sievers, and the ASD from Perkin-Elmer. Figures of merit such as limit of detection, stability and linearity will be presented for each detector.

Abstract # 117 - 11:00 AM - Poster Presentation - Exhibit Hall - Wednesday
"A Tale as Old as Time & Does the On-line Instrument get the same as the Lab? A Comparison of a UVF On-line Sulfur Analyzer and a UVF Bench Top Sulfur Analyzer"
Roy G. Rodriguez, Lisa J. Nash, Rick Trevino - PAC, L.P.
Since the inception of process/on-line analyzers, the question has been: does it give the same result as the laboratory model? Since the laboratory analyzers have been accepted by voluntary consensus bodies and have proven track records, this stands to reason. Shown will be results attained using two analyzers: one is a Laboratory bench top Sulfur Analyzer (by Ultraviolet Fluorescence) while the other is a process/online Sulfur Analyzer (by Ultraviolet Fluorescence). The calibration standard for the On-line unit will be included in the calibration curve of the Lab model. The samples will be Diesels analyzed on both units.

Abstract # 118 - 2:30 PM - 20 minutes - Floral Hall A 2 - Wednesday
"Analysis of Acrylonitrile by FTMS"
Wayne Rimkus, Dean Davis, Ken Gallaher, Dan Phelps - Siemens Applied Automation
Acrylonitrile is produced domestically by a single process - propylene ammoxidation. The chemical reaction is $2\text{CH}_2=\text{CH}-\text{CH}_3 + 2\text{NH}_3 + 3\text{O}_2 \rightarrow 2\text{CH}_2=\text{CH}-\text{CN} + 6\text{H}_2\text{O}$. The reactor sample is difficult to measure analytically because of the high amount of water, easily polymerizable components and catalyst fines it contains. A new technology (on-line high resolution FTMS has recently demonstrated success in analyzing this stream. The presentation will discuss why this was so and elucidate the unique advantages this technique has over other analytical choices like GC or other mass spectrometers.

Abstract # 119 - 1:00 PM - 30 minutes - Floral Hall A 2 - Wednesday
"Use of a Multi-Component Photometer for Process Safety and Quality Control"
Bill Worthington, Joern Baasner - Sick Mahak
Photometers are very suitable for analyzing liquid/gas mixtures which exhibit absorption in the UV through to the IR spectral range. This work presents examples of process monitoring by means of an extractively measuring photometer for the production of Isocyanate and Vinylchloride. For continuous monitoring of chemical processes, simple sample processing, reliable measuring techniques and low maintenance requirements are essential. Photometers, especially filter photometers, fulfill the stringent demands of process analysis since they are of a simple and rugged design. Nondispersive single beam infrared photometers offer long term stability and high availability. Modern filter photometers are capable of simultaneously measuring several components as well as interfering constituents under constant conditions. The composition of the sample is in no way affected by the measurement. The sample preparation is kept to a minimum as possible. An overview of application examples and specifics of the system design will be presented.

Abstract # 120 - 12:00 PM - 30 minutes - Floral Hall A 2 - Wednesday
"GC-SCD Sulfur Analysis of Refined Petroleum Products with Wide Boiling Ranges"
Colin Beswick and James Fu - Engelhard Corporation
The presentation will discuss the gas chromatographic capabilities that have been set up at Engelhard to precisely measure the quantity and identity of sulfur molecules in refined petroleum products. Particularly challenging are liquids that have a wide boiling range and consist of components from light gases to heavy cycle oils. These analytical methods have been applied to understand the different kinds of sulfur compounds in fuels and to assist in developing catalysts and additives that remove sulfur compounds and aid refiners to deliver quality low sulfur gasoline and other fuels to the market place.

Abstract # 121 - 8:30 AM - 7 hours - Vine I & II - Wednesday
"Comprehensive Gas Chromatography Training Course"
Restek Corporation

Abstract # 122 - 8:30 AM - 7 hours - Vine I & II - Thursday
"GC/MS Training Course"
Restek Corporation

Abstract # 123 - 4:15 PM - 20 minutes - Iris - Wednesday
"Rheology, Mechanical and Thermal Properties of Nanocomposite SBR Prepared from Latex: Effects of Clay Content and Processing Factors"
N. Noroozi, A.A. Katbab and F. Goharpey - Amir Kabir University of Technology
Nowadays polymer-clay nanocomposites have been known as one of the most attractive and significant materials for various applications because of their exceptional properties and high research interest have been focused on this field. Nanocomposites have found applications in many industries such as automotive and packaging. The aim of the present study is to prepare SBR nanocomposite with organo modified clay by latex coagulation method. Taguchi design of experiment method has been used for preparation of the samples. SBR nanocomposite morphology has been studied by X-ray diffraction (XRD) and scanning electron microscopy (SEM). The compounds were characterized in respect to their rheological, viscoelastic and curing properties. Mechanical and thermal properties of nano-compounds prepared with organomodified clay have been evaluated. Mechanical properties and curing behavior of the nanocomposites were compared with carbon black filled SBR. Also effect of nanoclay on abrasion resistance has been studied.

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Alpha Omega Technologies, Inc. HP 5890 GC Parts, Agilent 6890 GC, Geanna High Speed Refinery Gas Analyzer
Booth # 104, 106

American Laboratory - American Lab & American Lab News
Booth # 111

AMK Glass - Petrochemical Glassware & accessories

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also offer pH/ion meters, colorimeters, electrodes, voltammetric analyzers, rancimats and much more. Our dedication to quality products, service and customer satisfaction set us apart."

Booth # 220

Bruker - Visit both Bruker AXS & Bruker Optics in booth # 503 and discover our innovative instruments. Bruker AXS provides powerful X-Ray Fluorescence Spectrometers for elemental & process analysis, featuring both Wavelength Dispersive & Energy Dispersive systems. This year at the GCC, Bruker AXS is launching PETRO-QUANT, our exciting new elemental analysis solution designed specifically for the petrochemical industry. PETRO-QUANT makes the task of analyzing oils & polymers faster, safer, and easier than ever. Visit our booth to see why Bruker XRF instruments are the most cost-effective quality control tools for fuels, lube oils, polymers & more. At Bruker Optics, you'll learn why we're a leading supplier of FT-IR, FT-NIR, Raman and TD-NMR spectrometers for laboratory and process applications. Find out more about Bruker AXS at: www.bruker-axs.com and Bruker Optics at: www.brukeroptics.com.

Booth # 503

Bryant, Strawn and Walker - Karl Fisher Titrators, Digital Thermometers, Sampling Devices, Centrifuges,

Booth # 102

BSI Inspectorate - Specializing in the testing, inspection and analysis of petroleum and petrochemical products and raw materials. EPA certified for testing Ultra Low Sulfur Diesel. Oversight testing programs available to ensure fuel quality and compliance. BSI Inspectorate has eighteen laboratories in the U.S. and locations in key petroleum centers worldwide. For information contact Ranzy Morgan at 713-944-2000 ext.126 or sales@inspectorate.com

www.inspectorate.com

Booth # 809

Buchi Analytical - TKN, Digestion and Distillation Units, Local Representative: Lone Star Instruments, Georgetown, Texas

Booth # 703

Cannon Instrument Company - Automatic and manual instrumentation, Tanaka Flash, Cloud and Pour Point Testers, Zematra ASA P-Value Residual-Fuels Tester, Cannon CAV-2200 Automatic Viscometer, Cannon MiniAV Automatic Viscometer, Cannon PolyVISC Automatic Polymer Viscometer, Viscosity and Flash Point Standards and related software.

Booth # 806, 808

CEM Corporation - CEM Corporation will be displaying several items from their analytical division, including the MARS Digestion/Extraction system, 2 MARSXpress Vessel set, XP1500+ Vessels, 3 and 7 ML Microvessels, a High Through put Accessory set, and the new LabXpress Filtration System.

Booth # 109

Chem Coast, Inc. - Chem Coast Incorporated is a full service Inspection Company and a modern Independent Analytical Testing Lab. The focus of Chem Coast is to be a service to the supply chain of it's clients by providing high quality support both in the field supervision and in the lab support given to the logistic chains of its customers. Working in the port of Houston since 1981, Chem Coast is always focused on the needs of the customer's product.

Booth # 715

Chemplex Industries - X-Ray Spectro Chemical Sample Preparation Equipment, Accessories & Supplies

Booth # 819

Coastal Specialty Gas - Specialty Gas

Booth # 721

Compass Instruments, Inc. - Tribology Testing Equipment, Lubricity, Friction, Wear and Abrasion Testing. Instrument Sales, Support, Service, and Contract Testing Services. Representing: Falex, PCS, Tetra, Conastoga, Strama

Booth # 515

Control Company - Instruments for petrochemical, refining, environmental, metal pharmaceutical and plastic labs. New Traceable Instruments: timers, stopwatches, conductivity meters, conductivity electrodes, conductivity standards, humidity meters, thermometers, barometers, counters, pumps, tachometers, programmable controllers, moisture meters, light meters, anemometers, calipers, and sound meters. ISO 9001 Certified Instruments are supplied with a Traceable Calibration Certificate, traceable to NIST (National Institute of Standards and Technology), and calibration complies with ISO/IEC 17025 requirements and is A2LA (American Association for Laboratory Accreditation) accredited.

Booth # 717

Cosa Instrument Corporation - Total Sulfur, Nitrogen & Chloride Analyzers, Portable Coulometric Karl Fisher Analyzers, Combustion Ion Chromatography Portable On-Line Dew Point Meters, On-Line Karl Fisher Moisture Probe.

Booth # 815, 817

DC Scientific Glass, Inc. - DC Scientific Glass is an ISO 9001 registered manufacturer of a complete line of precision glassware products and accessories for the petroleum laboratory. DC manufactures a broad range of products ranging from viscometer tubes to temperature probes for leading brands of equipment. DC is also partnered in the United States with Paragon Scientific and Tintometer Limited to provide first class products for petroleum testing. Paragon, an ISO 17025 accredited company, products include certified reference materials for Viscosity, CCS, Color, TAN (Total Acid Number), TBN (Total Base Number), and Flash Point. Tintometer, an ISO 9001 registered manufacturer, products include a full range of color measurement equipment including ASTM, Saybolt, Pt/Co color and more.

Booth # 308,310

DCG Partnership 1, LTD - Manufacturer of custom calibration standards in gas cylinders and ampoules. Provide independent analytical services in addition to method development and gc repair.

Booth # 722

Dionex Corporation - Ion Chromatography HPLC, Mass Spec, Accelerated Solvent Extraction

Booth # 509,511

domnick hunter inc. - UHP Laboratory Gas Generators (Hydrogen, Nitrogen, Zero Air & CO2 Free Air)

Booth # 908

Ed Martin and Associates, Inc. - ASTM Thermometers, SAMA Thermometers and PerformaTherm® ASTM mercury

substitute thermometers (to ASTM E2251), API Hydrometers, Thermo-Hydrometers, Digital Thermometers and Dial thermometers have been assessed and approved under ISO-9001:2000. NIST Traceable calibration laboratory services for temperature, density and viscosity. Instruments include Thermometers, Hydrometer, Viscometer, Certified Viscosity Oils, Weight's, Pipettors and Humidity. The laboratories have been assessed and approved to meet the requirements of ISO/IEC 17025 accredited. We also offer a complete line of gauging supplies to include gauging tapes, petroleum electronic thermometers, closed and restricted gauging systems. Additional supplies include water and gas indicating paste, cotton cord, tally books, various types of samplers, railcar measuring devices, and bacon bombs.

Booth # 701

Elementar Americas - Carbon, hydrogen, nitrogen, sulfur and oxygen determination via vario EL, elemental analyzers to be displayed. Results on trace N &/or S in petrochemicals will be available. TOC, various water measures including bound nitrogen analyzers also available at the elementar Americas booth.

Booth # 122

EMD Chemicals Inc. - EMD manufactures high-purity chemicals and reagents for research and analytical laboratories in industrial, academic and life science markets; high-purity chemicals for R & D, scale-up and production in pharmaceutical and biopharmaceutical industries; TLC plates and silica gel, test strips for environmental testing and microbiology products, including rapid tests for food, beverage and environmental companies. Products of interest to the petrochemical industry include our OmniSolv® high-purity solvents, OmniTrace® and SupraPur® high-purity acids, Aquastar® Karl Fisher titrators and reagents, Optifix® liquid handling devices and ACS/GR reagents for QC and environmental analysis.

Booth # 420,422

Entech Instruments

Booth # 322

Environmental Express - Environmental Express specializes in new and innovative lab supplies. Corrosion-free metals digestions, along with disposable BOD bottles and pre-prepared filters for TSS in making labs more productive around the world. Other products include oil and grease equipment and supplies for IC, COD, TCLP, KKN and metals analysis.

Booth # 916

Environmental Resource Associates - The largest and oldest provider of environmental proficiency testing services and quality control standards, we have available every chemical, microbiological, radiochemical, and whole-effluent toxicity analyte required by all USEPA, NELAC, and state-specific programs. We are accredited by NIST NVLAP, A2LA and ISO 17025 standards.

Booth # 719

Environmental Sampling Supply - Precleaned Sample Containers, Tedlar Bags, Bacti Bottles, Ultra Pure Blank Water, 5035 Sampling Tools.

Booth # 708

ESA Biosciences, Inc.

Booth # 1016

Fisher Scientific - World-leader in serving science for the life science, biomedical, pharmaceutical, safety, university, and chemical markets, enabling scientific discovery and clinical laboratory testing by offering over 600,000 products and services to over 350,000 customers in 145 countries. One-stop source of research, healthcare, safety, firefighting and controlled environment products, state-of-the-art e-commerce capabilities and integrated global logistics network services.

Booth # 315

Fluid Imaging - Particle Imaging and Counting in Fluids, Local Representative: Lone Star Instruments, Georgetown, Texas

Booth # 703

GE Analytical Instruments - GE Analytical Instruments manufactures some of the world's most sensitive, selective, and robust scientific instruments for chemical analysis of impurities in water and other elements. At GCC 2004 you will see: • The New Sievers® Dual Plasma™ulfur and Nitrogen Chemiluminescence Detectors (SCD and NCD) with new Dual Plasma Burner and Controller, expand detection capabilities with better sensitivity, selectivity, and reliability of results. • The New Sievers® 900 Series Total Organic Carbon (TOC) Analyzers, featuring the application-specific 900 Laboratory, 900 Portable, 900 On-Line, and 900 Autosampler. All provide unparalleled ease-of-use, versatility, low maintenance, and superior accuracy and build on the proven technology of the best-selling Sievers Model 800 TOC Analyzer. • The Ionics® Brand TOC and TOD Analyzers for water quality measuring solutions where controlling higher levels of contamination is important to managing manufacturing processes and environmental commitments.

Booth # 714

GFS Chemicals - Literature, Karl Fisher, Lab Reagents

Booth # 317

GOW-MAC Instrument Co. - Custom solutions for a wide variety of analytical requirements for gas analysis. On-line and process gas analyzers, i.e., total hydrocarbon analyzers and NEW aromatic hydrocarbon analyzers; moisture analyzers, and point-of-use gas chromatographs. Standard and corrosion resistant instruments available. Instruments engineered for hazardous locations and duties are available. Specialty gas handling equipment for industrial, laboratory, and educational applications are also offered.

Booth # 619

GT Instruments - Automatic distillation units D86, D1160, D2892, D5236. Automatic ASTM physical test analyzers. KF coulometric and volumetric Titrators; Softwares for gas chromatography Simdist. PONA, PIONA, DHA, Turnkey GC Systems for Petroleum and Petrochemical Industries, extensive range of semi automatic or manual ASTM Petroleum apparatus, catalyst physical properties analyzers, catalyst high pressure micro and semi pilots. Water baths and cooling circulating baths.

Booth # 814

Hamilton Sundstrand Applied Instrument Technologies - Hamilton Sundstrand's Applied Instrument Technologies (AIT) unit manufactures rugged, reliable spectroscopy and gas chromatography process analyzers for on-line monitoring and process development. AIT is introducing the new RPM series of Raman spectrometers for both process development and on-line monitoring. Other product lines include: Analect FTIR/NIR, PIONIR NIR, the MGA

line of process mass spectrometer, and the FXi process gas chromatograph. AIT's instruments are found worldwide in the applications as diverse as petrochemical, pharmaceutical, steel, fermentation, and biotechnology. AIT has earned recognition for providing high quality products with low maintenance costs. Visit us on the web at: www.hs-ait.com

Booth # 910

Honeywell Burdick & Jackson - High purity solvent bottles, cans, drums, pressurized containers and columns.

Booth # 921

Horiba Instruments - Horiba will display products for measuring particle size analysis, sulfur-in-oil analyzers and oil-in-water monitors.

Booth # 414

HORIBA Jobin Yvon, Inc - The new ACTIVA Simultaneous Solid State Detector ICP Spectrometer will be featured. ACTIVA maintains the strengths of Jobin Yvon spectrometer's superb optics while incorporating a solid-state detector to improve productivity with reduced analysis times. JY Glow Discharge-Optical Emissions Products and the Horiba Carbon/Sulfur, Oxygen/Nitrogen and Hydrogen Analyzers will also be presented.

Booth # 416

Hunter Lab - Color measurement systems for research and quality control-measure lab color of solids and powders as well as APHA/PtCo/Hazen, Gardner, Saybolt and ASTM color of liquids.

Booth # 1104

ICL Calibration Laboratories, Inc. - An ISO/IEC 17025 Accredited Calibration Laboratory offering A2LA accredited, NIST Traceable Calibration Services for Thermometers, Hydrometers, Weights, Humidity devices and Volumetric Glassware. ICL is also a leading supplier of ASTM & non ASTM thermometers, Hart Scientific brand Platinum Resistance thermometers and Industrial RTD's, Digital Thermometers, ASTM Hydrometers, ASTM Weight sets, ASTM & Petroleum glassware, Humidity equipment, Viscometers and Viscosity Standards. For our customers involved with petroleum gauging and inspection, ICL offers ThermoProbe Digital Gauging thermometers, Lufkin Oil Gauging tapes & bobs, NIST traceable tape verification services, MMC Intl. Tri-Mode (UTI) Gauging tapes, samplers and vapor control valves, Petroleum Samplers, Factory Authorized repairs and recalibration services for both ThermoProbe and MMC Intl. as well as many more gauging accessories. For a complete listing of ICL's products and services, please visit www.icllabs.com.

Booth # 319

Intertek Caleb Brett - Laboratory testing, routine quality control analyses, high end analytical techniques, method development/validation, outsourcing, laboratory & project management inspection services - 3rd party quantity/quality control.

Booth # 117

JASCO - Jasco specializes in analytical instrumentation in the areas of Spectroscopy and Chromatography. With 45 years of experience within the academic, pharmaceutical, biotechnology, and industrial markets worldwide, JASCO is an excellent choice for your laboratory needs. We offer a full line of reliable and robust instrumentation: UV/VIS/NIR, FTIR, Fluorescence, Circular Dichroism, Raman, FT-Raman, Polarimeters, SFE/SFC, and HPLC. JASCO is one of the few companies offering a single, cross platform software for our many different instruments, which save the customer space, time, and money.

Booth # 115

JM Science, Inc. - Exhibiting AQUACOUNTER automatic and Karl Fischer titrators. Low cost COM-300 automatic titrator and low cost KF 200 series titrators are the right instruments at the right price. AQ-2000 and AQV-2000 coulometric and volumetric titrators come with color LCD display, CFR Part 11 compliance and full computer control. Large selection of semi-automated and automated titration systems plus solid and oil evaporators in stand-alone and automated configurations. Wide range of HPLC columns and detectors.

Booth # 411, 510

Kelly Scientific Resources - Kelly Scientific Resources is the largest Scientific Staffing organization in the world. Our staff consists of dedicated Scientific Professionals who have industry experience and can understand your staffing needs, saving you time and money. We have 7 offices in Texas and Louisiana to serve the entire Gulf Coast region as well as national and international offices to meet your entire organization's needs. Our specialty areas include Petrochemical and Physical Science, Specialty Chemicals, Biotech and Life Science, Clinical Lab Science, Environmental Science, Exploration and Production and Geoscience. Let us share with you our best pre-qualified, pre-screened and interviewed scientific candidates today!

Booth # 603

KIN-TEK Laboratories, Inc. - Kin-Tek Laboratories, Inc. is exhibiting Trace Source™ permeation tubes and instruments for dynamically blending ppm, ppb and ppt concentration gas mixtures. Standards for a wide range of compounds including volatile sulfurs, oxygenates, hydrides, moisture and oxygen are available. Kin-Tek specializes in creating complex mixtures to simulate real sample streams. Typical applications include low ppb concentrations of sulfur compounds in polymerization grade propylene matrix, arsine in ethylene, and oxygenates in olefins. Other applications include trace moisture in gases, and HRVOCs in cooling water. Most mixtures are traceable to NIST through physical standards.

Booth # 1015, 1017

KITCO INC - Laboratory items made of platinum

Booth # 119

Koehler Instrument Company - Viscometers, Flash Point Testers

Booth # 803, 805

Lab Products, Inc. - Chromatography and headspace supplies, environmental sample containers, general lab supplies.

Booth # 514

Labquip, Inc. - Laboratory casework, tops, sinks, faucets, hoods & blowers. We represent Thomas Scientific catalog sales of all laboratory related equipment, disposables, and other daily laboratory needs.

Booth # 107

Lawler Manufacturing - Lawler Manufacturing is sponsoring the Classic Lawler Equipment Photo Contest with deadline of mid-September in celebration of over 60 years of serving the fuels and lubricants industry. Visit our website <http://www.lawlercorp.com/photocontest> to register. We will announce the winner and display the winning photograph at GCC. We have a wide selection of high quality lab apparatus including: automated and manual cloud, pour, freeze and cold filter plugging point equipment; asphaltene; FIA analyzer; octane & cetane knock engine automation systems; oxidation; rust; thermal oxidation stability test (TOST). Visit our booth to learn why we are still the leader in the art and science behind

precision controlled heating and refrigerated laboratory apparatus. See how our heated tube technology replaces bulky blocks. Examine our new diffuser stone permeability and porosity automated apparatus for D892 and D6082 that compliments our existing liquid and air foam baths. Check out our automated reference fuel blender for Octane and Cetane knock engines. Also, we welcome new equipment design applications, so bring us your requirements.

Booth # 906

Lazar Scientific, Inc. - US Sales and Service Representative for Stanhope Setta Co., state of the art manufacturer of testers for petroleum related products. Featuring new MultiFlash line of automated flash point testers. Automated and temperature controlled Setafash Testers. Elemental Analyzers from Analytik Jena (sulfur, Nitrogen, Chlorides), Phase Technology cloud and pour point instruments, specialized lubricating oil tests from Tannas Instrument Co. and King Refrigeration. Glassware, colorimeters and standards for color, TAN/TBN, viscosity from DC Scientific Glassware.

Booth # 418

LCGC Magazine - Magazines

Booth # 1020

LCS Constructors, Inc. - LCS Constructors is a general contractor and construction manager specializing in laboratory and technical facilities for clients in a wide variety of industries, such as oil and gas, chemical and petrochemical, industrial testing, life sciences, and consumer products. LCS services include lab planning and programming, pre-construction planning, new construction and renovations, lab operations and maintenance, and facility commissioning. LCS delivers unparalleled safety and quality on every jobsite, everyday. Learn more about LCS at www.lcslab.com.

Booth # 1102

LEAP Technologies - Front-end automation instruments for GC, GC-MS, Headspace, SPME, SPE, LC&LC-MS. Featuring Universal GC Injection Port for petrochemical analysis

Booth # 320

LECO Corporation - Since the introduction of the first rapid carbon determinator in 1936, industries around the world have trusted LECO Corporation to deliver technologically advanced products and solutions for organic and inorganic analysis. Today LECO is recognized globally as a leader in the development of high-quality analytical instrumentation, mass spectrometers and chromatographs, metallgraphy equipment, and consumables.

Booth # 820

Liquid Analytical Resource - Online analyzer for TOC, BOD, COD and Toxicity. Gas monitoring.

Booth # 207

Lone Star Instruments - RESTEK Chromatography Products, MAN-TECH Auto titration Systems, HORIBA Particle Size Analyzers, ABB FTIR-FTNIR Systems, FLUID IMAGING Particle Imaging and Counting in Fluids, BUCHI TKN, Digestion and Distillation Units.

Booth # 703, 705, 707

Mallinckrodt Baker, Inc. Dedicated to exceeding industry quality standards with two brands, J.T. Baker and Mallinckrodt Laboratory Chemicals. As one of the most trusted and respected suppliers in the industry, Mallinckrodt Baker offers an expanded line of innovative products designed for the most demanding

experiments. Product lines include high purity solvents in CYCLE Tainer returnable containers, BakerDRY ultra low water solvents, high purity acids at affordable prices, specialty chemicals, custom solutions, solvent blends and packaging to meet your unique requirements.

Booth # 723

Man-Tech Associates, Inc. - Complete range of Autotitration systems with autosamplers automating 1-179 samples per batch. For environmental labs automated pH, conductivity, alkalinity, fluoride, turbidity, color, residual chlorine from a single sample. New, Color AssayPlus, automated color and color based tests such as phosphate, nitrate and silica. BOD AssayPlus, automated BOD. New software with improved sampler control and technology enabling 21 CFR Part 11 Compliance. PC-AutoMoisture System, automated Karl Fisher. AssayPlus Systems, economical automated pH, conductivity, turbidity, color and ion selective electrode measurements. Solutions for petrochemical titrations including TAN/TBN, Mercaptan/Sulfur, caustic and MEA analyses. Local Representative: Lone Star Instruments, Georgetown, Texas

Booth # 705

Matheson TriGas

Booth # 112, 114

Metrohm-Peak, Inc. - Intelligent range of Ion Chromatography instrumentation, automation, columns, software, reagents, consumables, accessories and services. Complete line of benchtop and online instrumentation offers superior innovation, affordability, reliability and quality - backed by unrivaled service and support.

Booth # 704

Mettler Toledo - Titrators, pH Meters, Software, etc.

Booth # 621, 623

MicroLiter Analytical Supplies, Inc. - New packaging for vials and caps, microplate sampling system, inserts at low prices, syringe filters, product dispenser and LEAP Technology, Inc. consumables.

Booth # 919

Microsensor Systems, Inc. VaporLab Hazardous Workplace Gas Analyzer, Eagle 24/7 Monitor, HAZMATCAD Plus Chemical Agent Detector

Booth # 923

MIDAC Corporation - FTIR Spectrometer Systems

Booth # 118

Miller & Weber, Inc. - LEMIS-Baltic digital densitometers, both submersible and laboratory models will be displayed and demonstrated in the booth. Temperature, density and viscosity measurement instruments. PSL Certified Glass Capillary Viscometers and Certified Viscosity standards. Miller & Weber, Inc. is the manufacturer of PerformaTherm® ASTM mercury substitute thermometers (to ASTM E2251). PerformaTherm® thermometers give all of the accuracy and precision of mercury thermometers with none of the hazards. Also manufactured in our ISO9001:2000 certified New York manufacturing facility: mercury thermometers (both ASTM and non-ASTM), EnviraThermT precision non-mercury thermometers, Heritagebrand® glass hydrometers. Also digital thermometers and bi-metal thermometers. Complete ISO/IEC17025 accredited NIST Traceable calibration laboratory services for temperature, density and viscosity applications including Temperature Calibration, Hydrometer Calibration, Digital

Densitometer Calibration, Viscometer Calibration and Certified Viscosity Oils.

Booth # 323

MKS Instruments, Inc. - MKS is a leading global provider of products that measure, control, power and monitor critical parameters of advanced manufacturing and research environments. Products include gas analysis instruments; portable leak detectors; pressure transducers and control valves; vacuum gauges; vacuum fittings and valves; mass flow controllers; pressure/gas flow calibration systems; microwave, RF and DC power supplies; and digital I/Os and gateways.

Booth # 203

Molecular Analytics - Molecular Analytics is a leading edge scientific, engineering, and production firm with more than 15 years experience in ion mobility spectrometry (IMS) and other direct measurement technologies. Molecular Analytics specializes in gas monitoring systems optimized for a wide variety of applications, including chemical processing, continuous emission, process control, oil, and uranium enrichment.

Booth # 202

National Laboratory Specialists - Laboratory furniture

Booth # 618,620,622

Ohaus Corporation - Scales and Balances

Booth # 218

OI Analytical - O.I. Analytical provides products used for chemical analysis. We develop, manufacture, sell, and service analytical instruments that detect, measure, analyze, and monitor chemicals in liquids, solids, and gases. We also provide products used to digest, extract, and separate components of chemical mixtures. We provide application-specific solutions for the environmental, defense, pharmaceutical, food, beverage, petrochemical, chemical, semiconductor, power generation, and HVAC industries. Our products include: Continuous Air Monitoring Systems for chemical warfare agents; Gas Chromatography Systems and components.

Booth # 821, 823

Oxford Instruments Analytical - Twin-X X-Met

Booth # 123

PAC - Your single most responsive source for the world's leading brands of analytical and testing equipment for laboratory applications; including Total Nitrogen, Total Sulfur, Speciated Nitrogen, Speciated Sulfur, Water Content, Viscosity, Volatility and Cold Flow Properties such as Cloud/Pour Point and Freeze Point. Customers world wide rely on the PAC family of companies: **Alcor, Antek Instruments, Herzog, ISL, PetroSpec, and Precision Scientific Petroleum Instruments**. PAC has combined the world's most respected, well accepted brands of test equipment into a single dynamic manufacturing and service organization.

Booth # 403

PANAlytical - We are the leading supplier of instrumentation and software for X-ray fluorescence spectrometry. We offer a wide range of WDXRF and EDXRF instrumentation for the analysis of petroleum based products; from the MiniPal benchtop system to the high power Axios WDXF, including our new trace element

analyzer, the psilon5. We also introduce the Axios Petro, a version of our Axios WDXRF spectrometers that is the fastest and most sensitive wavelength-dispersive X-ray fluorescence (WDXRF) spectrometer currently available for the petrochemical industry. The Axios-Petro is configured especially to meet the needs of XRF analysis in the petrochemical industry - today and in the future. Offering the highest levels of reliability in this demanding environment, the Axios-Petro is a sequential XRF system for all XRF applications, from sulfur through catalysts to wear metals. It is simple to operate and the compact design is easily integrated into today's laboratories. The Axios-Petro enables you to perform routine chemical analysis more quickly, efficiently, and accurately than ever before. As a sequential XRF system for all XRF applications, the Axios-Petro handles analyses including: determination of sulfur in all kinds of petroleum products, monitoring of Fe, Na, Sb and K as process efficiency indicators, monitoring of additives and stabilizers in lubricating oils, regular wear metal analysis in lubricants, determination of S, Ni, Cl and V levels in waste oil, analysis of petroleum coke.

Booth # 311, 410

Parker Hannifin Corp. - Parker will feature IntraFlow, an ANSI/ISA 76.00.02 complaint modular surface mount gas and liquid delivery system designed for analytical, laboratory and other general purpose flow control systems. Also introducing the Vent Master for vent header pressure control. Other flow control products, including valves, regulators and fittings, will be available.

Booth # 818

Parker Hannifin/Balston - We manufacture gas generators to eliminate cylinders from the laboratory. There is no longer need to buy cylinder reserves and use laboratory space as protection from late deliveries, transportation interruptions, or periods of tight supply. With gas generators, you control supply. These state-of-the-art gas generators can continuously generate ultra-high purity gases for LC/MS, GC, FT-IR, TOC, ICP and AA instrumentation. Products are backed by fully staffed field sales and service organizations and one-year warranty.

Booth # 105

PerkinElmer Life & Analytical Sciences

Clarus 500 GC

Booth # 221

Petro Industry News - Petro Industry News Magazines

Booth # 720

Petrolab Company - Ametek-Petrolab Company, your distributor for Grabner, Petrotest, Lovlbond, Tamson, Lawler and Horiba Instruments offers the greatest selection of products for the petroleum industry. Petrolab provides instrumentation for analysis of Octane, Flash Point, Distillation, Vapor Pressure, Viscosity, Density, Color, Penetration, Oxidation, Gum Content, Foam Ductility, Softening Point, Pour Point, Cloud Point, Benzene, Aromatics and Tribology. Active leadership in ASTM has recently resulted in new method approvals for D6377 Vapor Pressure of Crude Oil and D6378 Vapor Pressure for Gasoline. Petrolab is the leader in Flashpoint technology, including: D6450 Flashpoint, D93 Pensky-Martens, D56 TAG, D92 COC, Rapid Flashpoint and SetaFlash.

Booth # 903

Petroleum Systems Services Corp. - Viscosity, Distillation, Oxidation Penetration, Vapor Pressure, Flash Point, Glassware, Tribology Equipment.

Booth # 209, 211

PhasePSL Instruments, Inc. - VA300 Fully Automatic
Viscometer With Auto Sampler 70X Cloud, Pour & Freeze Point
Analyzer Viscosity Standards.

Booth # 415

Phenomenex - GC, HPLC, and SPE Columns and Accessories.

Booth # 611

Pollution Equipment News/Rimbach Publishing

Inc. - Publications: Pollution Equipment News and Industrial
Hygiene News

Booth # 918

Popper & Sons, Inc. - Laboratory needles, pipetting, non-
coring-septum-penetration, stainless needles, glass syringes,
stainless steel Luer adapters.

Booth # 205

Praxair Specialty Gases & Equipment - Specialty Gases
and related equipment

Booth # 204, 206

Premier Lab Supply - XRF Sample Preparation: Sample
Cups, Thin Film, Binders, Aluminum Cups, Press, Grinder,
Platinum Labware

Booth # 208

Process Instruments, Inc. - Raman Instrumentation for
process control.

Booth # 419

Proton Energy Systems, Inc. - Proton Energy Systems
manufactures compact, automated, reliable, low-maintenance
and cost-effective hydrogen generators for laboratory,
development and industrial applications. HOGEN® hydrogen
generators use advanced PEM technology, and produce UHP or
better hydrogen at up to 200 psig. HOGEN GC lab hydrogen
generators produce 200 psig 99.9999+% hydrogen for GC
carrier and fuel gases. Never a cell stack or dryer failure. HOGEN
20 and 40 hydrogen generators supply up to 40 scfh of 200
psig UHP grade hydrogen. Gas users considering productivity,
safety, reliability and convenience choose on-site hydrogen
systems from Proton Energy Systems. Booth # 607,609 Proton
Energy Systems, Inc.

Booth # 607,609

Quantum Analytics - Rent, lease or purchase from our
multi-million dollar inventory of new and reconditioned
instruments—ready for immediate delivery. Instruments
available include: GC, GC/MS, HPLC, LC/MS, Pyrolysis Systems,
FT-IR, GC-IR Interface, Thermal Desorption Systems, Post-
Column Systems, SimDis Software, Gas Generators, Sample
Preparation and Handling, Data Systems and Software, ICP/
MS, AA, FL, UV/Vis, TOC and XRF; manufacturers include:
Agilent Technologies, Chromsys, Digilab, Frontier Laboratories,
Markes International, Matheson Tri-Gas, Mulan Laboratory,
Pickering Laboratories, Teledyne Tekmar and more.

Booth # 520

Ramin' Corporation - ASTM Test Systems, Glassware and
Accessories.

Booth # 517

Renaissance Analytical, Inc. - Specializing in the
configuration of gas chromatographs for user specific analyses

including refinery gas, natural gas, propylene, other monomers,
regulatory analyses, and custom analyses. Also providing
consulting, service, training, and other technical assistance.

Booth # 917

Restek Corporation - GC/HPLC Columns, fittings,
Silcosteel/Siltek/Sulfinert (inert treatments), Agilent
replacement parts, Local Representative: Lone Star
Instruments, Georgetown, Texas

Booth # 707

Retsch Inc. - Laboratory mills including the MM 301 multi-
purpose mill and others specifically for grinding polymers and
plastics. Also, laboratory sieves and sieve shakers for particle
size analysis will be displayed.

Booth # 210

RICCA Chemical/Bel-Art - Bel-Art is renowned for its
complete line of laboratory ware. Products on display will include
beakers, bottles and graduated cylinders to specific-use items
(desiccators, Sterileware sampling devices) and widely-used
utility items (racks, funnels, pipettors). A wide variety of safety
equipment (eye wash stations, safety chemical dispensers and
glove boxes) are also manufactured. Among our best-selling
lines are the Spinbar magnetic stirring bars, safety-labeled wash
bottles, and an assortment of products for use in Life Science
applications. Ricca Chemical Company offers chemical testing
solutions including standardized acids, bases and other titrants;
pH buffers; atomic absorption and ICP spectroscopy stds; Ion
and specific electrode stds; pH and chemical indicators; ASTM,
APHA, EPA, AOAC, USP, ACS, and other solns for water,
environmental, chemical, food, beverage, pharmaceutical,
petrochemical and other analyses.

Booth # 802

Rigaku - Rigaku/MS provides the world's most complete
line of x-ray diffraction and fluorescence instruments, including:
desktop and laboratory powder diffractometers, high resolution
thin film diffractometers, x-ray reflectometers, small-angle
scattering systems, rotating-anode generators; sequential and
simultaneous x-ray spectrometers. In addition to instruments,
complete contract services are offered for x-ray analysis.

Booth # 605

S&S Professional Services - Brochures, Promotional
items, Posters

Booth # 710

Saybolt LP - Lab Services, Vessel Inspections, and Tank
Calibrations

Booth # 222

Scientific Equipment Company (SECO) - Automatic,
Lovibond Tintometer, Spectrophotometric, Colorimeter For
Petroleum Products, Measuring; ASTM Color ASTM
D1500, Saybolt Color ASTM D156, Platinum-Cobalt/Hazen/APHA
Color ASTM D1209, Dyed Aviation Gasoline ASTM D2392,
Lovibond R.Y.B.N., Gardner Color ASTM D1544, I.P Units, C.I.E.
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Chemicals, SECO is a Stocking Distributor For Laboratory
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Containers, High Purity Chemicals, Lab Furniture, Representing Over 500 Manufactures, 1300 Page Catalog

Booth # 810

Scientific Marketing - Offering solutions to increase your throughput without increasing your input. Showcasing instruments from Teledyne Tekmar's VOC product line Velocity XPT, the fastest most efficient sample concentrator, coupled with the Solatek 72 Multi-Matrix Autosampler or the AquaTek 70 Autosampler. The 7000HT is the only headspace sampler that allows sample temperatures up to 300° C. TOC analyzers using both chemical oxidation with the Phoenix 8000, and combustion technology with the Apollo 9000 and 9000TN. SEAL Analytical's AQ2 discrete wet chemistry analyzer and Bran and Luebbe's Quattro Auto Analyzer. Super Critical Fluid Technologies specializes in extraction utilizing the SFT-150, reaction using the Phase Monitor II, and laboratory services. Lab Connections' LC-Transform provides an interface between liquid chromatography and spectrometry. AGS Scientific is offering Discrete Mercury Analyzers for water, solids and gases.

Booth # 614,615,616,617

SCI-TEC, Inc. - "Turbiscan Heavy Fuel", a new instrument that measures the stability of heavy fuel oil and complies with ASTM D7061-04. It provides an objective, repeatable and accurate measurement of asphaltene stability in only 15 minutes. The Turbiscan allows for the accurate determination of the concentration of additives required to optimize the stability of the fuel. Also applicable for monitoring the demulsification of water-in-oil emulsions during the extraction process and analyzing the stability of drilling fluids.

Booth # 922

Selerity Technologies - High Temperature HPLC with temperature programming, Aquachrom for water only HPLC with FID detection and SFC to meet the ASTM D5186 and D6550 method protocols.

Booth # 522

Separation Systems, Inc. - Separation Systems, Inc. is a highly experienced provider of specialty gas chromatography systems in the petrochemical and environmental industry. Separation Systems specializes in systems that require accessories from various vendors while using the Agilent Technologies gas chromatograph as the main component of the application. We cover a wide spectrum of applications such as Refinery Gas, Natural Gas, Simulated Distillation, Detailed Hydrocarbon Analysis, Fast Chromatography, Supercritical Fluids, Trace Oxygenates and customized applications to meet customer requirements. The systems can be as simple as one automated sampling valve and one chromatographic column to complex multidimensional systems requiring multiple injectors, detectors, several valves and columns. Each instrument is designed, built and tested to meet the most rigorous standards.

Booth # 519,521,523

SGE, Incorporated - Chromatography Supplies - GC, LC, MS Columns, syringes, Liners, Ferrules, Septa, Fittings, Filters, Valves. Multidimensional GC, Pyrolysis GC, GC Cold Trap Systems, GC Sniff Port, GC BackFlush System. Leading Manufacturer of ETP Electron Multipliers for GC-MS, LC-MJ, ICP-MS, TOF-MS.

Booth # 304

SGS North America Inc. - SGS is the world's leading verification, testing and certification company. SGS is a global provider to the petroleum and chemical industry. Our areas of expertise are quantity and quality control, analytical testing, packing & forwarding of samples. SGS laboratories can test a

full range of petrochemical products, from raw crude oil to distilled and processed products. From physical to trace analysis, SGS has the professional staff and modern instrumentation to do the job quickly and accurately. When you need to be sure....SGS.

Booth # 302

Siemens Applied Automation - MicroSAM, Maxum Edition II

Booth # 223

Sigma-Aldrich/Supelco - We manufacture chromatography columns and laboratory chemicals for analysis and purification. Product areas include: HPLC and LC, Discovery HPLC and SPE product line for pharmaceutical applications, capillary GC, packed column GC, solid phase microextraction (SPME), AQUANAL® water test kits, PESTANAL® standards for environmental analysis, enzymes immunoassay test kits, ACCUFLUOR® fluorinating agents and HYDRANAL® Karl-Fischer reagents.

Booth # 215,217

Southern Petroleum Laboratories, Inc.

Analytical Literature for SPL, Inc.

Booth # 219

Specac Incorporated - Sampling accessories including diamond ATR for infrared spectroscopy and process cells and probes for on-line/at-line analysis measurements.

Booth # 1018

Specialty Gas Report - Specialty Gas Report Magazine is a quarterly publication for producers, distributors, and users of medical and specialty gases.

Booth # 110

Specialty Glass, Inc. - Laboratory Glassware and Thermoplastics

Booth # 103

Spectra Sensors, Inc. - Precision Optical Sensors for Industrial applications. Gas Analyzers for trace measurements of moisture, carbon dioxide, and hydrogen sulfide in Petrochemical Refinery process streams and natural gas pipelines. Portable and wall mount packages and sample conditioning accessories are available.

Booth # 1019

Spectro Analytical Instruments - SPECTRO, a division of AMETEK, will be introducing the new SPECTRO iQ EDXRF analyzer for low level sulfur analysis. SPECTRO offers a complete line of Atomic Emission Spectrometers based on ICP, EDXRF, and OES principles with a wide variety of applications for all major industries including Petrochemical, Chemical, Pharmaceutical, Environmental, Power, Metals, and Food. EDXRF units range from handheld to bench-top to high performance lab instruments up to process monitors. Sulfur analysis solutions for the lab, field and complete process analysis for incoming Crude, Pipelines and Blending operations.

Booth # 214

Star Instruments, Inc. - TOC Analyzers

Booth # 706

STARLIMS Corp. - Laboratory Information Management Systems

Booth # 108

TECH 2000 Services & Staffing Inc. - Tech 2000 specializes in scientific and technical staffing on a temporary, temp to direct, and a direct type basis.

Booth # 811

Teklab, Inc. - Gas Chromatography supplies, Syringes, Filter Driers, Oxygen Traps, Valco Valves, Regulators, Flowmeters, Septa, Ferrules, Tubing, Packed Columns, Capillary Columns, Swagelok Fittings, Inlet Liners, Vials, Bottles, Aluminum Seals, and closures.

Booth # 1005

Teledyne Leeman Labs - A complete line of elemental analysis instrumentation including: The Prodigy High Dispersion ICP with innovative solid-state detector, the Hydra Senes of Mercury Analyzers (including CVAA and CVAF), the 2200 family of Atomic Absorption (AA) Spectrometers (including Flame, Furnace and Tandem) and Plasma-Pure Inorganic Standards for ICP and Mercury Reagents.

Booth # 1014

Thermo Electron Scientific Instruments LLC.

FTIR, UV-VIS, ICP, LC, GC, AA, Sulphur, TOC, KP-MS, FTIR Microscopy, GC MS, RAMAN, Atlas Software, LIMS, Ph Probes, XRD, XRF

Booth # 303

TWSCO Specialty Gases - MicroBulk and Specialty Gases

Booth # 1203

United Chemical Technologies - Solid Phase Extraction products for Forensic, Environmental, and Pharmaceutical industries.

Booth # 116

Van London Company, Inc

Booth # 914

Varian, Inc. - Varian, Inc. is a world leader in scientific instruments and a major supplier of instrumentation and consumable laboratory supplies for the chemical analysis and life science markets. We will be displaying GC/MS, GC, UV, ICP, AA and Fluorescence instruments, as well as a selection of our consumable laboratory supplies.

Booth # 909

VHG Labs, Inc

Spectro Chemical Products and Supplies.

Booth # 1003

VICI Valco Instruments - Valves, fittings, tubing, perm tubes, columns, injector liners, flow restrictors, detectors.

Booth # 915

VWR International - VWR International is a global leader in the distribution of scientific supplies, with worldwide sales of \$2.8 billion. VWR's business is highly diversified across a spectrum of products and services, customer groups and geography. The company offers more than 750,000 products, from more than 5,000 manufacturers, to over 250,000 customers throughout North America and Europe. VWR's primary customers work in the pharmaceutical, life science, chemical, technology, food processing and consumer product industries. Other important customers include universities and research institutes; governmental agencies;

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Booth # 421,423

Waters Corporation - Waters Corporation provides a wide range of solutions that incorporate the latest technologies for sample extraction and clean-up, chromatography and detection, including mass spectrometry. Waters is the market leader in high resolution gas chromatography/mass spectrometry (HRGC/MS) for environmental analysis. For more information on the system that will fit your analysis needs, please visit

www.waters.com

Booth # 314, 316

Wheaton Science Products - Research and industrial laboratory supplies.

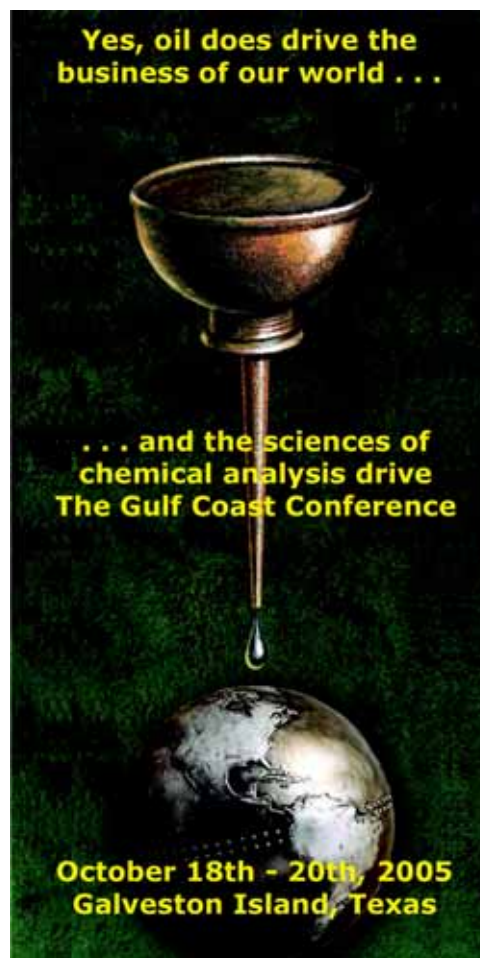
Booth # 816

Wiley - Publications - Books/Journals

Booth # 321

Zeltex, Inc. - ZX-101 Line of Portable Octane/Cetane/Biodeisel Analyzers ZX-440XL Laboratory Octane/Cetane/Biodeisel Analyzer

Booth # 718



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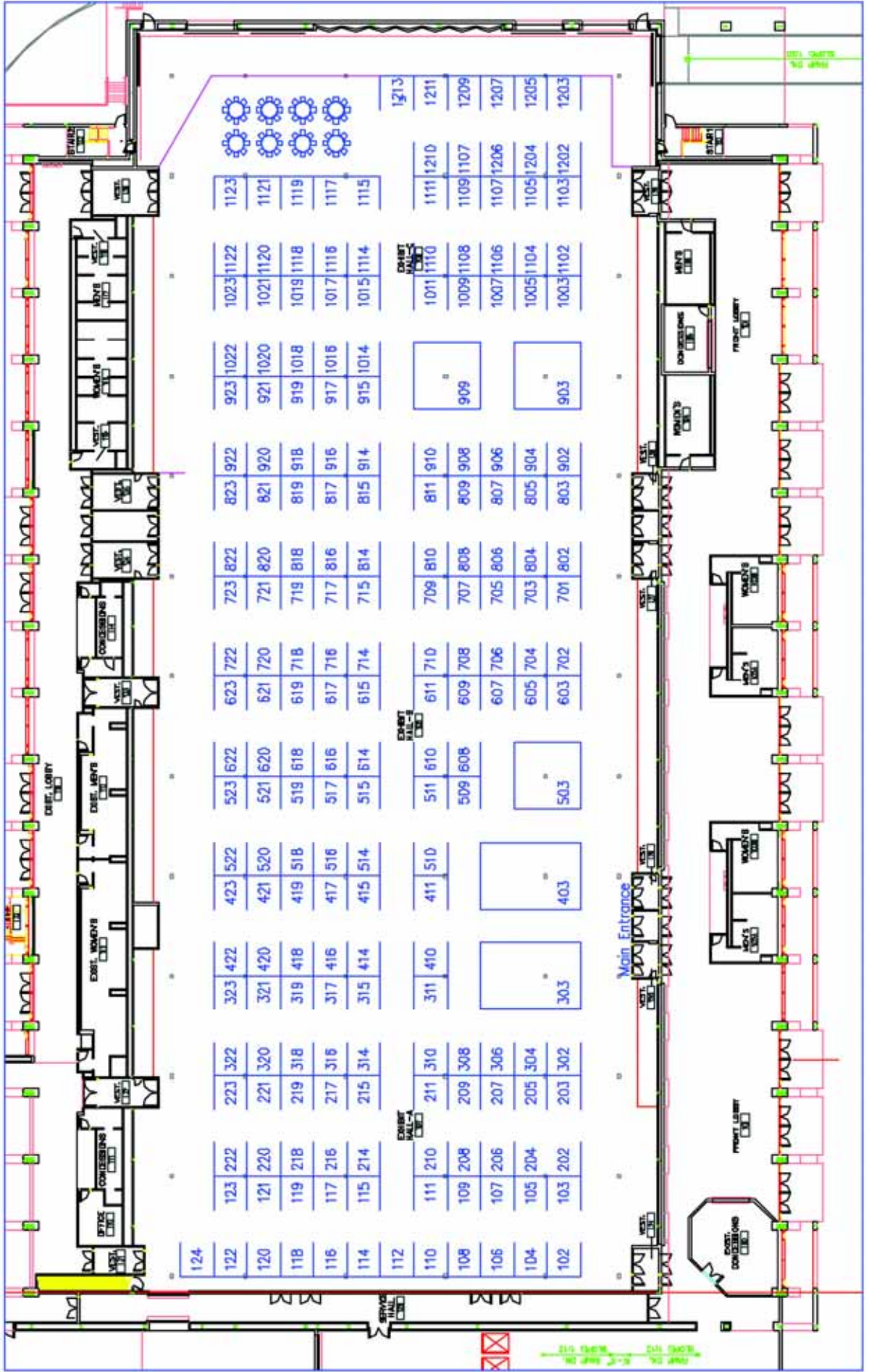
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