

September 11, 2012
Abstracts of Micro and Fast Chromatography Sessions at Gulf Coast Conference 2012
October 16 – 17, 2012 in Galveston, Texas U.S.A.

1: Micro and Fast vs. Traditional Gas Chromatography: End User Perspectives

Discussion Leaders

Dr. Carl Rechsteiner, Chevron Corporation

Mr. Wayne Kriel, SGS North America, Inc.

About 30,000 gas chromatographs are sold annually whether in labs, processing plants or transportable environments. Estimates vary but only about 1/30th of the units sold are of the micro and fast variety even though the technology was introduced in the early 1980s. Recent collaboration between users and suppliers has advanced the capability to the point of rivaling the big GCs in many production analytical environments: plant support laboratories, online and at line process control, field environmental and exploration & production platforms. The discussion leaders will share their perspectives on the technology and what drives them to use micro and fast gas chromatography.

2: Not Just Simulated Distillation - Not Just a Transportable: Diverse Applications for Fast Gas Chromatography

Ned Roques, Chief Chromatography Engineer Falcon Analytical
John Crandall, President Falcon Analytical

Micro and Fast GC are often put into a box: limited applications, delicate hardware, too special to be of real use. By throwing out traditional design constraints, novel Fast GC systems can be deployed for a broad range of measurements whether in the oil & gas patch, refinery, petrochemical and even biofuels markets. This paper will briefly describe the Fast GC design but focus on three applications for diverse markets and installation environments. Modular design enables plug and play columns and detectors (FID, TCD & DID) to deliver results 10 to 50 times faster than traditional gas chromatographic technique.

3: Recent Advancements in Upstream Hydrocarbon Characterizations Using Novel Fast Gas Chromatography Systems

Wayne Kriel, Director SGS Upstream Services
Graham Mullings, Chemist SGS Upstream Services

Fast and micro gas chromatography has developed into an enabling technology for rather sophisticated hydrocarbon characterizations whether in the gas patch or the oilfield. Boiling range distributions and heating values help drillers and producers alike understand the condition of wells and therefore tailor field operations for maximum efficiency and profit. Quickly obtaining geochemical parameters like gas to oil ratios, carbon number distribution and viscosity is important not only for production but also transportation and distribution.

This paper will show examples of implementations including sampling, analysis, data handling and packaging of light weight, low power fast GC systems for deployment upstream.

4: Establishing an ASTM Standard for Ultra Fast Gas Chromatography (UF GC) Focused on Boiling Range Distribution of Petroleum Distillates with Final Boiling Points up to 535°C

Steven Bostic, Marketing Consultant Falcon Analytical
Ned Roques, Chief Chromatography Engineer Falcon Analytical

Faster standard methods are needed to improve throughput and reduce costs all without compromising critical data quality. In plant support laboratories faster process diagnostics and product certifications are required. In the process itself, faster high-precision results are required especially regarding fuels and fuel blending components to enable narrowing the control limits and thus improving profitability.

This paper will discuss the new ASTM standard method and show the reference gas oil results (up to 535°C) delivered by a 5-minute cycle gas chromatography run compared to the current D-2887 procedure.

5: Use of Fast Gas Chromatographic and Chemometric Technologies for Hydrocarbon Characterizations from Exploration Activities to the Refinery Floor and Beyond

Dr. Carl Rechsteiner, Research Scientist Chevron Corporation
Dr. Brian Rohrback, President Infometrix, Inc.

Use of chemometrics by spectroscopists is well established. However traditional gas chromatography and chemometrics are not well associated in most practitioners' minds. Recent developments in Fast GC make cycle times nearly as fast as spectral analysis forcing the chromatographer to think about better ways to process and interpret the high data throughput. Chemometrics & automation provide an excellent solution to the problem.

This paper will discuss alignment, classification and modeling technologies that enable mining several kinds of databases to deliver real-time results for oil exploration and production, crude refining and fuels characterization using the data from Fast GC.

6: Recent Advances in Transportable Fast Gas Chromatography: Three Related Applications in Industrial Environmental Field Monitoring

David Picard, Principal, Clearstone Engineering
Yan Liu, Senior Project Engineer, Clearstone Engineering
Adam Coderre, Project Engineer, Clearstone Engineering

The demand for energy has driven exploration and production activities to increasingly remote locations. Everyone demands that the energy delivery process is safe and friendly to the environment. The need and demand for rapid, onsite spill & leak detection is very high. Advances in fast, transportable gas chromatography enables near realtime monitoring whether for boiler performance monitoring, field separation plants or exploration & production platforms. Three related applications will be described: extended natural gas composition, hydrocarbon liquids characterization and halogen tracer doping and monitoring. A short description of the impact they have in service of our clients will be given.

7: Useful Applications of Smart micro Gas Chromatography with the NeSSI Platform

Mike Cost, Parker Hannifin Corporation
John Crandall, Falcon Analytical

Micro gas chromatography, chemometrics and NeSSI systems are striving to reach their fullest potential in industry. Early adopters are eager to implement the latest advancements. However, it often happens that production colleagues take a "wait and see" approach. Thought leaders and early adopters alike must constantly remind themselves: "show doubters the usefulness and prove reliability."

We will discuss one batch and one continuous process application for these technologies. Intelligent use of hardware and software... both traditional and non-traditional, can prove the utility, value and reliability of faster, smarter, smaller, easier and greener process analytical systems based on the NeSSI platform.

8: Instrument Maintenance in the Fast Chromatography World

Dr. Brian Rohrback, President Infometrix

Chromatography is used in two ways. One is to provide a means of accurately quantitating a small number of compounds. The second is to evaluate a pattern of components to determine if the mixture is within specifications. As chromatography is brought into the sub-five-minute realm, we saw that we needed to rethink the software that is used to collect, store and interpret the chromatographic traces. What is less clear is that the same techniques used to automate the interpretation can be commissioned to simplify analyzer or instrument maintenance. Adding the maintenance queries comes essentially for free.

**9: Resistance to Change – Is It Really Safer or Just an Impediment to Improvement?
A Round Table Discussion**

Discussion Leaders – Dr. Carl Rechsteiner & Mr. Wayne Kriel

Regardless of the industry, regardless of the role (customer or supplier) change occurs at glacial speeds. While all companies have early adopters, commercial roll out of anything new to their corporate masses takes too long. Why? Is it really safer to do the same old thing at the expense of improvements in operational profitability?

The leader will propose some provocative questions for attendee comments in the context of moving recent advancements in gas chromatography and advanced statistical analysis towards large scale commercial implementation in the modern hydrocarbon processing environment.

Networking and refreshments will follow the discussion in the meeting room.

Link to GCC 2012 Program: http://www.gulfcoastconference.com/conf_program.cfm

Link back to www.falconfast.net