5th Annual micro & Fast Gas Chromatography Symposium

micro & Fast Gas Chromatography:

The Empowering Force for Unconventional Analytical Chemistry

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(Chevron retired)

Presented 2016 Gulf Coast Conference
Houston,,TX October 11-12, 2016

Abstract

In 2015 the micro & Fast Gas Chromatography symposium focus was on demonstrating that the continuous development and improvement of micro and fast GC technology has moved it into the mainstream of gas chromatography. The authors showed that the technology is capable of much more than vapor samples and analyzers deployed in pristine laboratories. This 5th Anniversary symposium will show not only the very high performance levels that have been achieved with these breakthrough analyzers but also that their performance, size, power and speed empower application of analytical chemistry by gas chromatography in ways and in locations not previously possible . . . even in the back of a Jeep.

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The Journey: micro & Fast Gas Chromatography

- A short, quick look back
  - Snapshots from 2011 to 2015 GCC presentations
  - Shows the advances from historical gas samples only to fully capable fast gas chromatography from air components to hydrocarbons up to C_{50}
- A short, quick preview of 2016 GCC presentations

2011
The ASTM Journey Begins,
(validating fast GC as a technology workhorse)

- Calidus presented December 2009 for the first time
- Boiling point data presented June 2010
  - Subcommittee requested the RGO campaign reported here
  - Suggested an initial method draft
- Initial draft method presented December 2010
- Results presented to ASTM D02.04 June 2011
  - Committee authorized preparation of a balloted draft method
  - Will be presented in December 2011 for balloting

2012
Fully Automated Analytical Fast Gas Chromatography
Sampling, Calibration, Analysis, Reporting

2013

Rapid Deployment in Remote Locations

Solution:

- Hand carry Calidus micro GC on airplane
- Natural Gas Analyzer with FID and TCD
- 6 minute analysis (C_1-C_{14}, CO_2, air)
- Minimal cross training, utilizes *ChromPerfect*

Results:

- Arrived onsite from Houston within 48 hours
- Calidus calibrated and analyzing samples within 6 hours
- Cleared backlog of 30+ natural gas samples within 48 hours

Total Time: 102 hours (~4 days)

Falcon Analytical Calidus GC: http://www.falconfast.net/ (2013)

Increasing GC Throughput

– The D7798 Inter Laboratory Study validates external equivalency with D2887

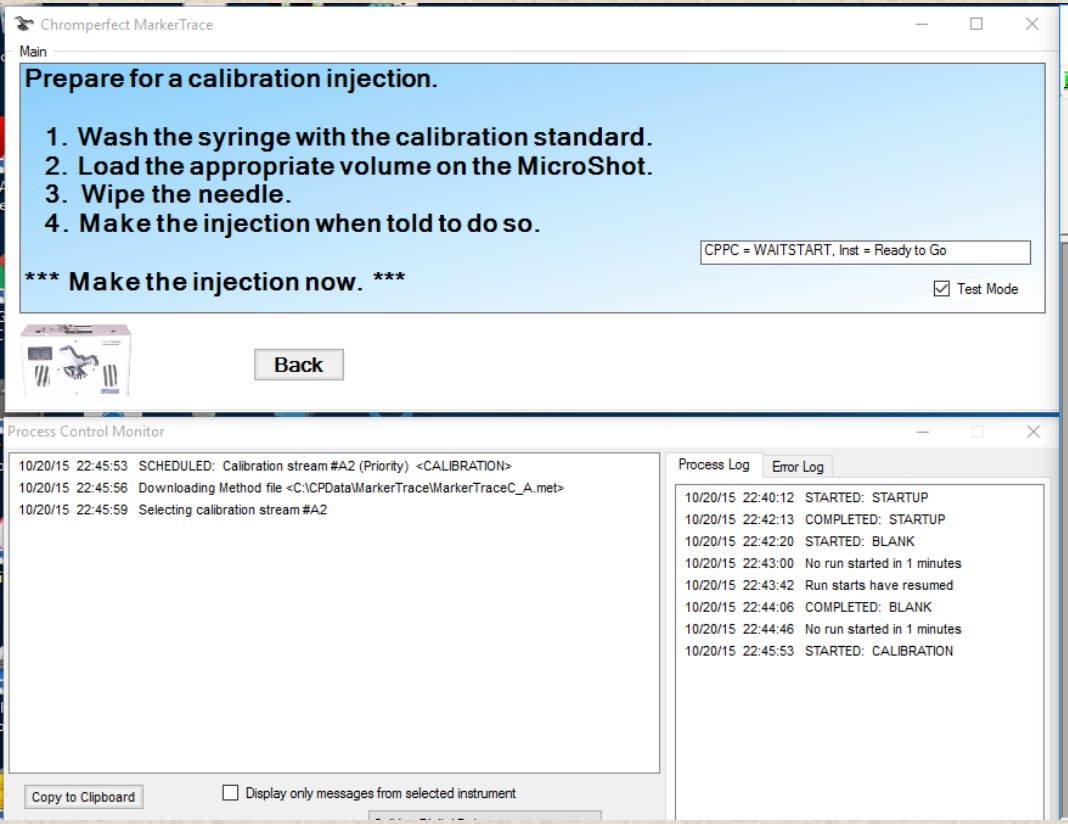
- Faster analyses… < 5 minute cycles
- Easier operations… automation
- Data equivalency from an internal perspective
- Data equivalency from an external perspective

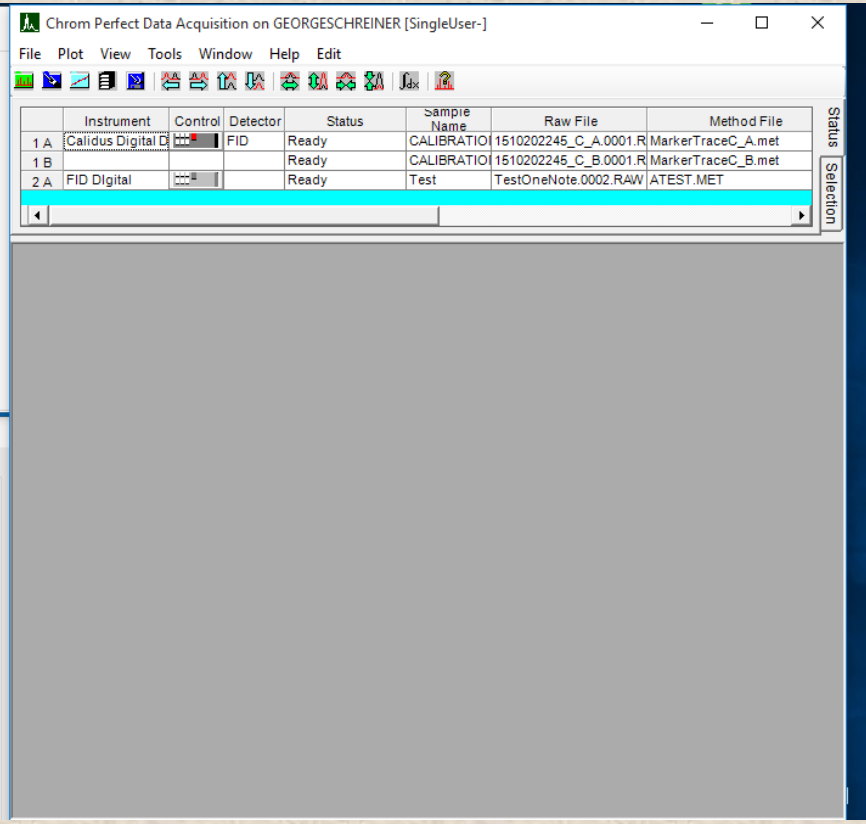
chromperfect

2015

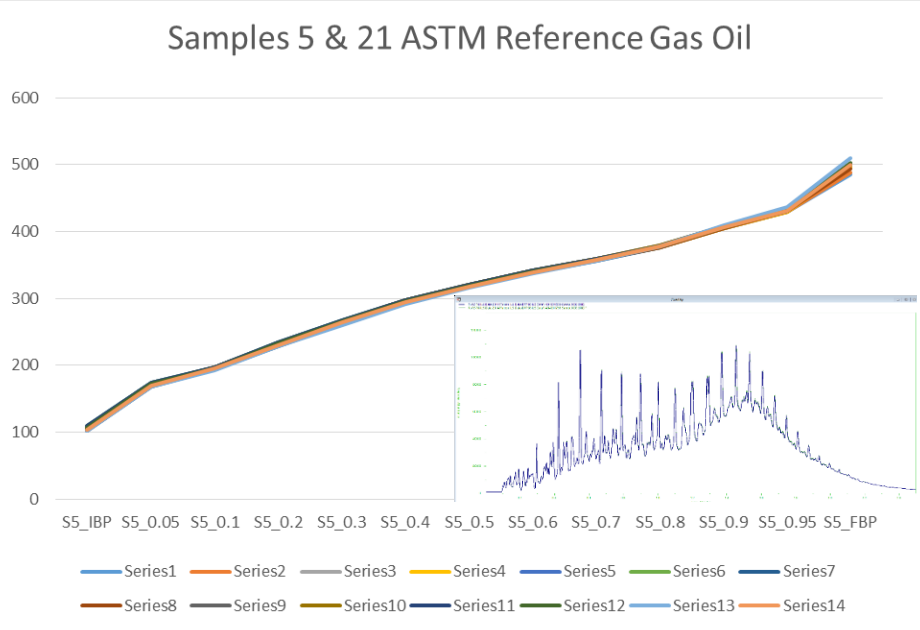
The importance of software and automation for the novice user

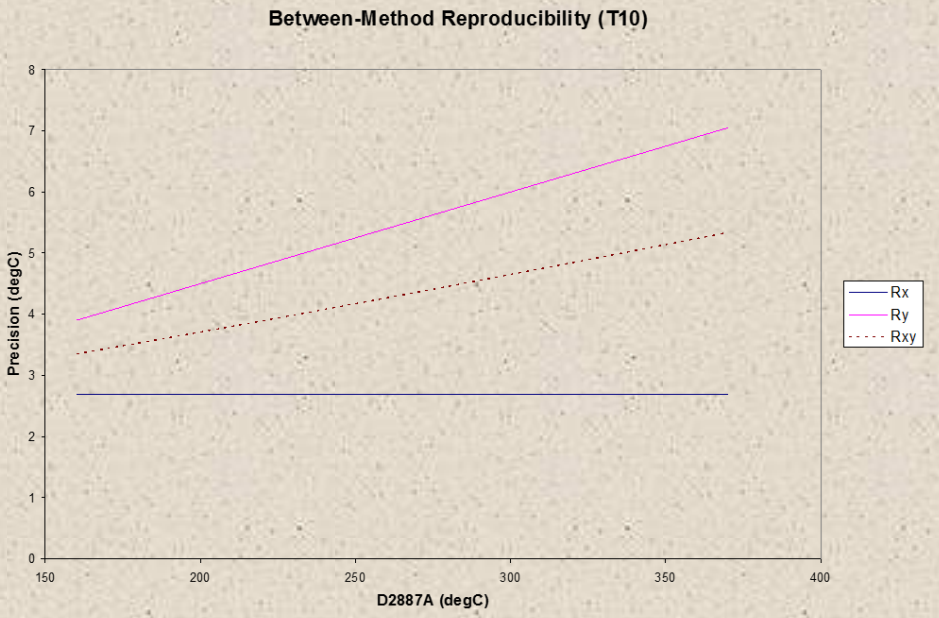
Calibration





2015
ASTM D2887/D7798 Statistics
Fully Validated





Agenda-1

		Presenter
1:00pm	Introductory Remarks (#127)	Dr. Carl Rechsteiner
1:10pm	Micro GC Fusion – Advancing Gas Analysis (#128)	Chingyue Yeung
1:30pm	Fast Gas Chromatography using Heated Headspace Gas Autosampling Techniques: Ethylene Oxide and Dioxane in Fatty Acids (#129)	Derrick Saul
1:50pm	Fast Gas Chromatography Meets Fast Miniature Mass Spectrometry (#130)	Dr. Chris Brown
2:10pm	Fast HPLC Enables Online Process Analyzer Technology (#148)	Dr. Ernie Hillier
2:30pm	Fast Gas Chromatography in the Refinery Quality Control Laboratory (#133)	Dr. Carl Rechsteiner
2:50pm	Break	

Agenda-2

		Presenter
3:00pm	Making SimDist Faster and More Robust (#147)	Dr. Brian Rohrback
3:20pm	Boiling Range Distributions: In the Lab, In the Process (#134)	Joe Perron
3:40pm	Contrasting Spectroscopy and Chromatography for Motor Fuel Assessments (#135)	Dr. Michael Roberto
4:00pm	The Role of the Chromatography Data System in Fast GC: Control, Data Fusion, Automation (#145)	George Schreiner
4:20pm	Transportable Fast Gas Chromatography for Pipeline Product Interface Detection and Flare Controls (#143)	Shane Stewart
4:40pm	Analysis of Chemical Markers in Adulterated Fuels using a Transportable Ultrafast Micro Gas Chromatograph (#144)	Dr. J.C. Reyes
5:00pm	Adjourn	

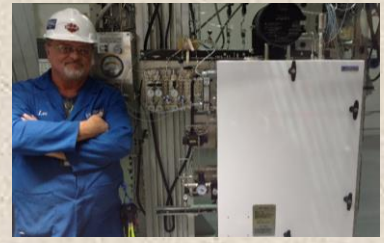
Thanks for your attention!

One Takeaway from this Symposium!

Data Equivalency…Regardless of Location

LAB

PROCESS



TRANSPORTABLE