



**Association of the
Chemical Profession
of Alberta**

2010 Annual General Meeting Saturday, May 8, 2010

Venue:

Executive Royal Inn Edmonton Airport
8450 Sparrow Drive, Leduc, AB
(Turn east off the QE2 at the Edmonton International Airport)

Schedule:

12:00 noon	Lunch
1:00 pm	Guest Speaker: Randy Whittal <i>"Applications of High Resolution FTICR Mass Spectrometry"</i>
2:00 – 4:00 pm	AGM Business Meeting (guests are welcome)

Cost:

Lunch is free to all ACPA members and guests
(but please let us know you are coming).

Registration Deadline: Friday, April 30, 2010

Please register with the ACPA office
by email: acpaoffice@pchem.ca
by phone: (780) 413-0004 or
by fax: (780) 413-0076

Guest Speaker – Randy Whittal

Randy completed his undergraduate co-operative education degree at the University of Guelph in 1991. After a short stay at Environment Canada he started graduate school at the University of Alberta in the fall of 1992. Randy completed his doctoral degree in Analytical Chemistry in 1996 with Professor Liang Li doing instrument development for mass spectrometry. He completed one year of post-doctoral studies with Professor Li followed by a two year PDF with Professor Al Burlingame at the University of California, San Francisco. Randy returned to the U of A in September 1999 to take the position of director of the Mass Spectrometry Facility in the Department of Chemistry. The MS Facility has been expanded and modernized over the past 10 years with several new instruments added to expand its service capabilities.

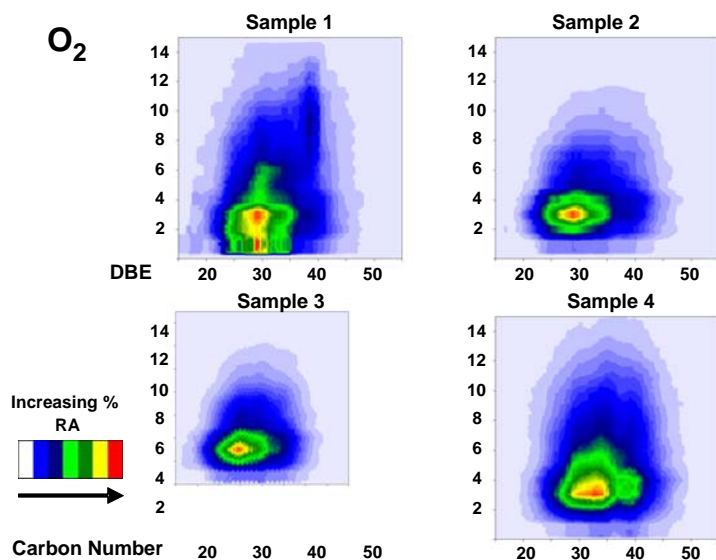
Applications of High Resolution FTICR Mass Spectrometry

Abstract

The Fourier Transform Ion Cyclotron Resonance (FTICR) Mass Spectrometer (MS) can provide academic and industry researchers with unmatched capabilities for complex mixture analysis. The high resolving power of the mass spectrometer can determine compound classes and determine the elemental composition of species within a complex mixture, often where there can be many compounds of the same nominal molecular weight that would remain unresolved on a less powerful instrument.

The FTICR-MS can provide definite identification of molecular formulae in difficult matrices such as biological fluids, protein mixtures, and crude oil mixtures. For example, the figure below contains a graphical summary of the high resolution mass spectra for four different bitumen samples, examining the relative types and concentrations of the O_2 class, commonly considered to be naphthenic acids when found in bitumens. These acids are considered to be corrosive under high temperature processing conditions, and are therefore studied extensively. The lighter species of naphthenic acids are also water soluble and can cause toxicity in water, due to leaching of these acids from bitumen deposits. The y-axis is double bond equivalents (DBE) and the x-axis is the carbon number of the compounds found. Color coding indicates the relative abundance of each type of compound.

An overview of FTICR MS and the application of the instrument to the analysis of mixtures and troubleshooting technical problems will be discussed.



3D plots of carbon number vs. DBE vs. relative abundance for the O_2 class.