

Chromatography Focus

WHAT, NO PHARMA APPLICATIONS AT ALL?

Bernie Monaghan

In a refreshing change from the 'how fast is fast' topics that appear to dominate most Separation Science Symposia these days (choose from UPLC/FPLC or UHPLC), this meeting attracted 126 paying delegates being arranged jointly by the Chromatographic Society, the RSC North West Region Analytical Division and RSC Chromatography and Electrophoresis Group showed that the technique of Gas Chromatography is still alive and kicking. The meeting was entitled 'Advances in GC Technology' and certainly lived up to the promise.

GcXGC IS AN "ON-LINE" MULTIDIMENSIONAL TECHNIQUE THAT ENABLES A BIDIMENSIONAL ANALYSIS OF THE ENTIRE INITIAL SAMPLE, THROUGH CONTINUOUS HEART-CUTTING.

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PROBLEM SOLVING ADVICE FROM EXPERIENCED PRACTITIONERS IS ALWAYS A SOUGHT AFTER COMMODITY

The Organiser Alan Handley from LGC welcomed the delegates and handed over the chair for the first session to Ted Adlard who introduced the first presenter, Ray Perkins from Anature who offered some thoughts on "New Solutions for GC Sample Preparation".

The focus of the talk was centered on the fact the current and future legislation from the EC will increase the workload of scientists and since the number of qualified scientists and trainers is insufficient, the best way to get around the situation is by Automation.

Just as with LC, advances in any technology do not solely rely on improvements in one area e.g. Instrumentation. Dr Jaap de Zeeuw from Restek talked about advances in the manufacture of the next generation of GC Columns and illustrated the advances that are now available as 'standard' with applications on current 'hot' application areas. He discussed ways of increasing the signal to noise ratio by suggesting methods to increase the signal and reduce the noise.

One of the technologies that have often been described as a 'solution looking for problems' appears to be nearer a home now and that is the use of Comprehensive GC (GCxGC) and Multidimensional GC (MDGC) for the analysis of complex samples. Prof Luigi Modello from the University of Messina, Sicily, Italy presented the work of his group in reinvigorating this technology with some extremely impressive chromatograms using 'heart cutting' to gain extra selectivity and resolution without losing sensitivity.

GCxGC is an "on-line" multidimensional technique that enables a bidimensional analysis of the entire initial sample, through continuous heart-cutting.

The technique of Thermal Desorption had already been discussed and explained so Dr Gavin Davies from Markes International concentrated more on the instrumentation available and application areas than theoretical considerations. In particular his talk on 'Thermal Desorption of Volatile and Semi-volatile compounds' centered on the advantages of recently developed technology involving sample re-collection which overcomes the 1 shot limitation of traditional Thermal Desorption (SecureTD-QTM).

Many delegates were anxious to hear problem solving tips and advice that they could use to make their own lives a little easier and Chris Sandy from Agilent Technologies provided some food for thought with his talk on 'Capillary Flow Technology for increased flexibility and productivity in GC'. These are a family of GC devices which touch on many of the more cumbersome and yet important functions involved in practical GC.

Table 1. 5 Key developments in Capillary Flow Technology

Manifold Plates	Complex flow structures with low thermal mass
Metal Ferrules	Easy to use, do not loosen or leak with oven cycling to 400°C
Deactivation of Metals	Makes metal surfaces as inert as column
EPC change	Back flushing now possible, MSD columns without venting, known column outlet pressure
Calculators	Accurately predict flows and pressures BEFORE installing devices

Tom Lynch from BP Technology Centre in Pangbourne, UK and is a very experienced chromatographer with vast application experience. Therefore he was just the person to speak on the topic of 'Detector Selection and Selective Detection – Powerful tools for Optimising GC Performance'. The list of available options as shown in Table 2 below. Applications on some were discussed.

Table 2. Detectors available for GC

Flame Ionisation
Thermal Conductivity
Electron Capture Detectors
Mass Spectrometry
Flame Photometric
Oxygen selective FID
Chemiluminescence
ICP-MS
Hall Electrolytic Conductivity
Photo-Ionisation Detector
Infra-Red

The last presentation of the day followed the detector theme and Don Harris from ASAP Analytical spoke in detail about using Infra Red (IR) Detection coupled with GC and Mass spectrometers. IR technology is a technique for this application has been around for many years but suffered from under investment by owners of the technology yet is still potentially a powerful tool for the analysts tool box. [1]

SUMMARY

The programme with the correct mixture of users wanting to learn whether via a commercial or scientific presentation, from a wide background of industries and enthusiastic, knowledgeable presenters indicated that there is a demand for this level of meeting. Not all delegates were skilled in GC by any means but most I spoke with were very happy to have had the opportunity to listen to, and question the presenters.

[1] International Labmate 2007/2008 Guide, p16-17
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