

Meeting Preview: The Chromatographic Society Spring Symposium & AGM Analysis of Polar Molecules

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The Chromatographic Society Spring Symposium will be held on Tuesday 21st and Wednesday 22nd of May at the AstraZeneca Macclesfield site. For the first time in the Society's history, the Spring Symposium will be co-organised with the support of the SCI (Society of Chemical Industry).

The theme for this meeting is the 'Analysis of Polar Molecules' and will primarily focus on the retention and separation of small and large pharmaceutical molecules. However the principles presented at the meeting will be relevant to many other application areas beyond the pharmaceutical industry. Analytical approaches to be presented in the meeting will include SFC, Capillary Electrophoresis, HILIC (and other LC approaches) for both small-molecule and larger polar molecules such as oligonucleotides.

As is tradition, the meeting will be spread over one and a half days allowing travelling time for delegates on the first day. There will also be a symposium dinner which will be held at a local country hall (transport will be provided to the venue from local selected meeting points).

The venue for the meeting is the AstraZeneca site at Macclesfield. The site is the largest in the AstraZeneca organisation with both drug development and production undertaken there. It has a rich history of developing and manufacturing a number of important medicinal products including Zoladex, Faslodex, Caprelsa and Zomig amongst many others. AstraZeneca has recently been announced a further \$120m investment at the site to increase production capacity for Zoladex.

We have a number of confirmed academic and industrial speakers for the meeting who will present alongside vendors outlining the latest research and applications towards the analysis of polar molecules.

The meeting will be opened by **Professor Apryll Stalcup** of Dublin City University who will provide an overview of approaches for the



analysis of polar compounds. She will reflect on the history and development of approaches. We are delighted that Professor Stalcup is able to present at this meeting which will be the first occasion she has presented in the UK since her appointment as Professor for Analytical Chemistry at the University in 2012.

The second plenary speaker is **Professor Wolfgang Lindner** from the University of Vienna in Austria. Professor Lindner is a recipient of the Society's Martin Medal in 2009, amongst many other prestigious international awards, which was awarded for his extensive contributions in the development of chromatographic science. Professor Lindner is also a permanent member of the scientific committee for the HPLC series of conferences. He will present his research on 'Enantioseparation of highly polar and ampholytic compounds: A challenge to be mastered' highlighting the development and application of the zwitterionic stationary phases created in his laboratory.

There will be a number of themed sessions in the Symposium. The first themed session will focus on the use of supercritical fluid chromatography (SFC) for polar analyte analysis. The first speaker in this session is **Dr Caroline West** from the University of Orleans in France. Dr West is quickly establishing herself in areas such as the characterisation of SFC stationary phases and in-silico prediction of chiral separations. Her presentation will focus on understanding the limitations of analysing molecules using SFC and how to extend the polarity elution range and is titled, 'Where are the polarity limits for SFC?'

The second speaker in the session is **Jenny Kingston** from Novartis. Jenny is a team leader in the drug discovery department at Novartis focussing on analysis and purification of new chemical entities. Jenny has an extensive background in this field and will be presenting a paper titled, 'SFC as an adaptable separation technology - improving the elution and peak shape of polar molecules by customising mobile and stationary phase conditions'. As the title of her presentation



Figure 1: The AstraZeneca site at Macclesfield where The Chromatographic Society Spring Symposium will be held

suggests she will be discussing ways that polar analytes can be efficiently analysed by this technique through manipulation of mobile phase conditions and stationary phase types.

Also presenting in this session is **Dr Andy Poulton** from AstraZeneca. Dr Poulton has worked extensively with SFC on both the Agilent Aurora and Waters UPC2 platforms in support of synthetic chemists in drug development. His talk, 'Adventures with SFC for high throughput asymmetric screens', will focus on some of his recent applications in the analysis of polar starting materials, intermediates and drug molecules and reflect on the use of water for elution of polar molecules in SFC. He will also discuss work on translating methods and transferring these between instrument types.

In the evening conference attendees will be invited to attend the Symposium dinner which will be held at a local country hotel. This will be an opportunity for delegates, speakers and vendors to network and socialise. Transport will be provided to and from the venue collecting and dropping-off at a number of places in the locality.

The second day will commence with another themed session which will focus on liquid chromatographic (LC) approaches to retaining polar analytes. The first speaker will be **Dr Mark Taylor** of Pfizer. Dr Taylor's presentation will focus on 'Gaining New insights into Pharmaceutical Stability using Electrochemical Reaction Cells'. He will cover the use of electrochemistry and discuss some approaches for analysis of polar oxidation products using HILIC, monolith columns, mixed-mode-direct high HRMS and CE-MS. He will also discuss approaches to analyse both very polar and very non-polar molecules simultaneously.

The next speaker in the session is **Dr James Heaton** of the University of the West of England. Dr Heaton is a post-doctoral researcher with Dr David McCalley and part of his research focuses on mechanistic understanding of HILIC separations. The title of his talk is 'Investigation into the efficiency and optimal operating conditions of hydrophilic interaction compared with reversed-phase liquid chromatography'. Dr Heaton will present a fundamental mechanistic understanding to the HILIC retention mechanism for polar compounds and why this LC mode can outperform standard reversed-phase chromatographic approaches when analysing polar compounds.

The final speaker in this session is **Tim Underwood** of GSK. Tim is well known in the industry for his work at GSK providing discovery chemistry separation and purification support. He will discuss a variety of approaches that are employed within his group for the retention of polar analytes on analytical and preparative scale using a diversity of stationary phase types. His presentation is titled 'Generic Approaches to the Analysis and Purification of Small, Highly Polar Molecules'.

Following the vendor presentation session (at time of press we still have some limited availability for vendor presentations), the Chromatographic Society annual general meeting will be held during lunchtime. All Chromatographic Society members are invited to attend and vote on any procedural changes, although all delegates are welcome to attend to learn more about the Society's wide support of chromatographic science in the UK and Europe.

Following lunch, the afternoon session will focus on a specific class of pharmaceutical molecules - namely oligonucleotides. The pharmaceutical industry is showing increased interest in these types of drug molecules due to their potential for high efficacy with low side effects. These molecules are typically based on a phosphate linker,



Figure 2. Some of the speakers presenting at the Symposium. From left to right, Professor Apryll Stalcup, Professor Wolfgang Lindner, Dr Caroline West, Dr Cari Sanger-van de Griend and Dr James Heaton

a ribose sugar and a Watson-Crick base pair, and as such are highly polar and can be difficult to analyse.

The first speaker will be **Dr George Okafo** of GSK who is a recognised expert in the oligonucleotide field. Dr Okafo has recently edited a text called 'Analysis of Oligonucleotides and their related substances' (ILM publications) as well as a number of refereed papers in this area. Dr Okafo will present on some of GSK's approaches to analysing and characterising these complex molecules in a presentation titled 'Development Strategies for Impurity Profiling: An Industry Case Study for Synthetic Oligonucleotides'.

The next speaker is **Dr Cari Sanger-van de Griend** of Kantisto, The Netherlands and University of Uppsala, Sweden. Dr Sanger is a well known authority on capillary electrophoresis which is an ideal platform for the analysis of polar molecules as separations are based on analyte charge to size ratio and is an excellent approach for the analysis of ionisable polar molecules. Her presentation is titled 'Polarisation of the use of the CE techniques in pharma industry?' She will discuss the application of this technology for the analysis of both small and large pharmaceutical molecules and highlight her recent research at the University of Uppsala in this area.

Dr Laurent Joron of Dow Chemical, France will deliver the penultimate lecture entitled 'Chromatographic separation of Peptides and Oligonucleotides with Polymeric Reverse Phase Materials'. As the title implies Dr Joron will highlight an approach for the analysis of oligo's using polymeric phases which potentially offer a number of benefits over standard silica based materials.

The final presentation of the Symposium will be provided by **Dr Elena Bichenkova** of the University of Manchester who will discuss 'Analysis of oligonucleotides and their synthetic analogues using HPLC-NMR hyphenated analytical techniques'. Dr Bichenkova will present her groups work on the use of LC-NMR for the identification of unknown oligonucleotide impurities which is another powerful tool for the analysis of these types of molecules. This approach reduces the time consuming isolation steps often required for the off-line analysis of these types of molecules.

The meeting is expected to be highly informative and relevant not just to pharmaceutical analysts, but any analysts challenged with the analysis of polar molecules. To register for this meeting please use the link on The Chromatographic Society website (www.chromsoc.com) or directly through our meeting Secretariat (Meeting Makers) at chromsoc@meetingmakers.com.

For any queries on this meeting or to discuss sponsorship opportunities, please contact Meeting Makers on chromsoc@meetingmakers.com.

Registration can be accessed directly through this link: https://www.eventspro.net/mm/getdemo.ei?id=1070278&s=_NCG0XNS33

We look forward to welcoming you to the meeting.