

HTC-14 (2016)

14th International Symposium on Hyphenated Techniques in Chromatography and Separation Technology

27 – 29 January 2016

Preceded by short courses on 26 January 2016

Symposium organised by
Ghent University (UGent), Free University of Brussels (VUB)
and the Catholic University of Leuven (KU Leuven), Belgium

Under the auspices of the
Royal Flemish Chemical Society (KVCV), Belgium
and the
Royal Society of Chemistry (RSC), United Kingdom

Venue: Het Pand, Ghent (Belgium)



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Left to right: Bas Eeltink, Deirdre Cabouter, Ken Broeckhoven, Frederic Lynen and Rudy Senten



Left to right: Frederic Lynen, Ken Broeckhoven, Bas Eeltink, Deirdre Cabouter and Joeri Vercammen

DELEGATES

	HTC-14	HTC-13
RSC	17	21
Company delegate	41	46
Scholarship	5	4
Invited guests	5	6
Delegates	130	159
Committee members (organizing, scientific, executive)	30	46
Invited speakers	25	22
Total	253	306

DELEGATES/COUNTRY

	Participants
Algeria	1
Australia	1
Austria	2
Belgium	92
Brazil	1
Czech Republic	1
Denmark	2
France	17
Germany	33
Hong-Kong	1
Hungary	1
Italy	6
Japan	1
Namibia	1
Poland	1
South Africa	1
Spain	4
Sweden	2
Switzerland	11
The Netherlands	30
United Kingdom	34
United States	10
Total	253

SCIENTIFIC PROGRAMME

Scientific programme of HTC-14 in a glance; details in annex

Activity	
Plenary lectures	6
Keynote lectures	26
Oral communications	24
Young & Emerging Scientists Presentations	31
Discussion session (<i>Battle of the Guru's</i>)	1
Tutorials	6
Workshops	1
Short courses	6
Vendor seminars	4
Industry Pitches	4
Poster sessions	3
Poster Flash presentations	20
Award ceremonies	4
<i>total</i>	<i>136</i>

- [POSTERS](#)

Poster category	
Fundamental Strategies (FS)	14
Emerging Detectors (ED)	4
Hyphenated Techniques in Pharmaceutical Analysis (HT)	8
Novel Multi-dimensional Separation Techniques (NM)	10
Biological Sample Preparation for Clinical and Forensic Applications (BS)	7
Hyphenated Separations for Biotechnology and Biopharmaceutical Analysis (HS)	13
Hyphenation in Quantitative Chromatography (HQ)	8
Food Analysis, including the Analysis of Contaminants and Residues (FA)	12
Green Chromatography including Environmental Science (GC)	6
Clinical and/or Forensic Applications (CF)	13
Combination with Chemometrics and Data-analysis (CD)	6
Applications in the Chemical and Petrochemical Industry (AC)	3
Natural Products, Flavours and Fragrance Analysis (NP)	9
	<i>Total</i> <i>113</i>

AWARDS

LIFETIME-ACHIEVEMENT AWARD

The Lifetime Achievement Award in Chromatography, sponsored by **LC-GC EUROPE**, was established in 2006 to recognize *outstanding achievements in hyphenated techniques in chromatography and for distinguished service to the International chromatographic community*.

Previous recipients of the Lifetime Achievement Award are:

- Professor James JORGENSON, University of North Carolina, Chapel Hill, USA, (2006)
- Dr. Robert SMITS, Oostduinkerke, Belgium, (2008)
- Professor Pat SANDRA, Ghent University, Belgium (2010)
- Professor Milos V. NOVOTNY, Indiana University, Bloomington, USA (2012)
- Professor Milton L. LEE, Brigham Young University, Provo, Utah, USA (2014)



The 2016 Lifetime Achievement Award recipient, presented at the HTC-14 Conference on 29 January 2016 is Dr. **Hernan J. CORTES**, H. J. Cortes Consulting LLC, Midland, Michigan, USA.

Dr. Cortes is member of the HTC-scientific committee since 1994 and was chairman in 2012 and 2014.

Title of the plenary lecture by Dr. Cortes:

The LCGC Lifetime Achievement Award: An Academic Mentality in an Industrial Environment

HYPHENATED TECHNIQUES IN CHROMATOGRAPHY AWARD

The author of the *most outstanding and innovative work in the field of hyphenated chromatographic techniques (paper or poster) presented during the conference* receives the Hyphenated Techniques in Chromatography Award (HTC-Award). This award is sponsored by **ELSEVIER SCIENCE**. This Award was established in 1996.

Previous HTC-Award winners are:

- Professor Janusz PAWLISZYN, University of Ontario, Canada (1996)
- Dr. Semjon SEMENOV, University of Moscow, Russia (1998)
- Dr. Heidi GOENAGA-INFANTE, University of Antwerp, Belgium (2000)
- Professor Aviv AMIRAV, Tel Aviv University, Israel (2002)
- Professor Gert DESMET, Free University of Brussels (VUB), Belgium (2004)
- Professor Luigi MONDELLO, University of Messina, Italy (2006)
- Professor Robert SHELLIE, University of Tasmania, Australia (2008)
- Professor Oliver TRAPP, University of Heidelberg, Germany (2010)
- Dr. Tuulia HYÖTYLÄINEN, VTT Research Institute, Finland (2012)

- Dr. Frank DAVID, Research Institute for Chromatography, Kortrijk and Ghent University, Belgium (2014)



The 2016 Award recipient is Prof. **Paola DUGO**, University of Messina, Italy.
Title of the lecture by Prof. Dugo:

Hyphenated chromatographic techniques for complex analysis of lipid samples

Authors: Paola Dugo, Paola Donato, Marco Beccaria, Francesco Cacciola and Luigi Mondello

KNOX MEDAL AWARD (RSC)



The Royal Society of Chemistry (RSC) honours individuals deserving special recognition for their innovation or influential work in the field of Separation Science with the Knox Medal.

Professor **Keith D. BARTLE**, University of Leeds, UK, received the Knox Medal during the Knox Award Ceremony on Thursday 28 January 2016.

Title of the plenary lecture by prof. Bartle: ***SFC : No Regrets***

POSTER AWARDS

The most innovative poster contributions of HTC-14 received the **HTC-14 Poster Award**.

- **FIRST POSTER AWARD**



Morgan SARRUT

Institut des Sciences Analytiques, Université de Lyon,
Villeurbanne, France

Optimization of conditions for the analysis of antibody-drug conjugates by comprehensive on-line two-dimensional hydrophobic interaction chromatography x reversed phase liquid chromatography hyphenated to high resolution mass spectrometry

Authors: Morgan Sarrut, Amélie Corgier, Szabolcs Fekete, Marie-Claire Janin-Bussat, Alain Beck, Davy Guillarme and Sabine Heinisch

- **SECOND POSTER AWARD**



Sam WOUTERS

Vrije Universiteit Brussel (VUB), Department of Chemical Engineering, Belgium

Optimization of microfluidic membrane suppressor designs for ion-exchange chromatography: characterization and hyphenation with on-chip conductivity detection.

Authors: Sam Wouters , Cees Bruggink, Christopher Pohl and Sebastiaan Eeltink

- **THIRD POSTER AWARD**



Maud BONICHON

Department of Analytical, Bioanalytical Sciences and Miniaturization (LSABM), Ecole Supérieure de Physique et de Chimie industrielles de la Ville de Paris, France

Development and characterization of Immunosorbents for the selective extraction of butyrylcholinesterase from human plasma, prior to enzymatic microreactor digestion and micro-LC/MS Analysis

Authors: Maud Bonichon, Audrey Combès, Charlotte Desoubries, Anne Bossée and Valérie Pichon

[in the above pictures the three HTC-14 Poster Award Winners with Frederic Lynen, Organising Committee chairman (left) and John Langley, Scientific Committee chairman (right)]

EXHIBITORS AND SPONSORS

The organisers wish to express their appreciation to the following sponsors for their generous support. Without their valuable financial and technical support, this major symposium would not have been possible.

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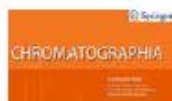
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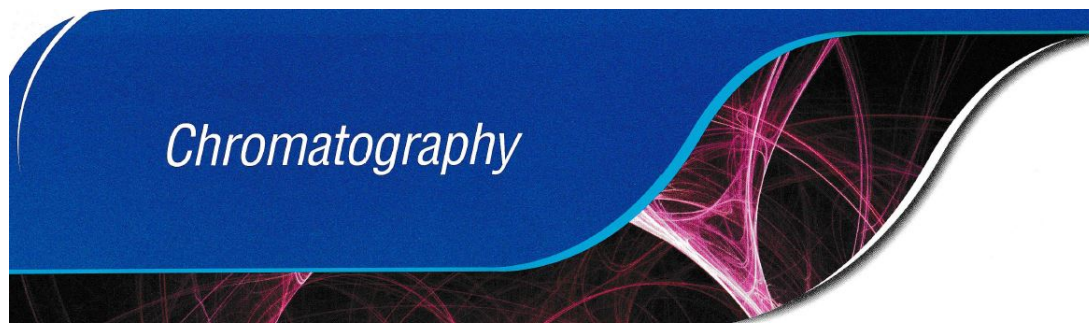
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ANNEX 1 – HTC-14 in the press

International Labmate - March 2016



Visiting the 14th International Symposium on Hyphenated Techniques in Chromatography and Separation Technology (HTC-14)

Trevor Hopkins, Editor Chromatography Today, trevor@intlabbmate.com

The 14th International Symposium on Hyphenated Techniques in Chromatography was held in Ghent, Belgium from 27th to 29th January 2016. An optional short course on Hyphenated Techniques in Supercritical Fluid Chromatography was held the day before HTC-14 on Tuesday 26 January, 2016.

The location for HTC-14, Ghent is a historic city in north-west Belgium, with roots back to the Middle Ages, and sits at the junction of the Leie and Scheldt rivers. Today it's a university town and cultural hub with a cobbled pedestrian zone centre known for medieval landmarks such as 12th-century Gravensteen castle and the Graslei, a row of guildhalls beside the Leie river.



Picture of the rear of Het Pand, the venue for HTC-14.

The symposia were again jointly organised by the Royal Flemish Chemical Society (KVCV) and the Separation Science Group of the Royal Society of Chemistry (RSC) and took place in the Het Pand which dates from the thirteenth century. Het Pand was used initially as a hospital (Utenhove Hospital) until a lack of capacity forced a change of use and it became a Dominican friary and convent. Since 1963, the building has been owned by the University of Ghent and is now the culture and congress centre.

The site, whilst very grand, has rooms which on the whole are compact, as with most historic sites, but still housed three parallel sessions, provided space for posters where the Belgian beer tasting took place and two exhibition areas housing 15 exhibitors, the majority of which were in an external tent (which thankfully was heated). Coffee breaks and lunches were taken in the exhibition areas.

As usual, industry (52%), academia (22%) and students (26%) were all well represented among the speakers and over 260 delegates from 22 different countries were in attendance. The short course covered different aspects of analytical separation techniques that employ compressed CO₂ as the main mobile phase component, typically referred to as Supercritical Fluid Chromatography (SFC). Starting from an overview of the fundamental aspects of SFC, the unique retention and selectivity properties are highlighted, as are the possibilities of the technique in pharmaceutical analysis. Hyphenation of SFC with MS and its possibilities in multidimensional separations were covered in detail.

When asked what the expectations for HTC-14 were, Frederic Lynen the HTC Chairman said: "The ongoing success of the HTC symposium series is strongly related to the impressive evolution that both high-end separation techniques and mass spectrometry underwent in recent decades. When considering the significant progress which has, for example, been made in the development of increasingly powerful comprehensive separation tools or in the field of increasingly higher resolution mass spectrometry, the

expectations for HTC-14 were that if it should be possible to bring together the main actors in these fields, while also providing a suitable platform for the vibrant community of young and emerging scientists active therein." He continued: "The choice was made to move the location of the HTC-14 conference to Ghent, reflecting the changes the HTC conference has undergone recently and to allow the participants of the conference to appreciate the hospitality of Ghent and its excellent symposium venues. As the preparations of HTC14 evolved the organising committee became increasingly convinced that HTC14 was heading for a success."

HTC-14 covered many innovative applications based on hyphenated techniques, taking place in 3 parallel sessions, of different lengths, making it difficult and a little frustrating when attempting to participate in the multitude of interesting discussions. The Poster flash sessions started at HTC-13 were continued with great success and five vendor lunchtime seminars were also available.

This review will now focus on a selection of the presentations given during the HTC-14 meeting. However an overview of the main topics covered during the symposium is given here:

- Petrochemical, Environmental, Toxicology and Industrial Analysis
- High-Performance Separations
- Hyphenated Approaches and multi-dimensional LC and GC-MS separations
- Ionisation Techniques and Mass Spectrometry
- New Method Development Strategies and Chemometrics
- Emerging Applications
- Emerging Technologies for Industry
- On-line Analysers and GC
- LC-MS Profiling and Method Development
- The Fundamentals and Power of Hyphenation
- Advances in Column Technology
- Fundamentals in Separation Science
- GC and GCxGC
- Biological Sample Preparation, Analysis of Biopharmaceuticals and BioAnalysis
- Food Analysis
- New Possibilities in Separation Science and Detection
- New Detection Possibilities and Pushing Detection Limits in 2D-LC
- Advances in SFC

The opening session of HTC-13 chaired by Dr John Langley (University of Southampton, UK) and Professor Frederic Lynen (Ghent University, Belgium) consisted of two plenary lectures, the first was to be by Professor Jim Jorgenson (University of North Carolina, USA) who sadly could not make the trip due to illness. Gert Desmet (Vrije University Brussels, Belgium) discussed the 'Building the Ideal Chromatography System: Why, What and How' and expressed the opinion that "instrumentation needs to change radically – getting rid of connection tubing" and "that in the future (20-50 years) all columns will be made by 3D printing". Dr Koen Sandra (Research Institute for Chromatography, Belgium) then discussed 'The Power of LC-MS and LCxLC in the Characterization of Recombinant Proteins, Monoclonal Antibodies and Antibody-drug Conjugates'.



Opening Session in the Refter room.

The three parallel sessions started after the morning coffee break with the High Performance Separations being well attended. Oral presentations were given on:

- Towards Hyperformance Two-Dimensional Liquid Chromatography. Professor Peter Schoenmakers (University of Amsterdam, The Netherlands)
- Hyphenation of Intact Protein Separation and Mass Spectrometry for Characterization of Biopharmaceuticals. Professor Govert Somsen (VU University Amsterdam, The Netherlands)
- Kinetic Gain Factors and Peak-Compression Effects in Ultra-High-Pressure LC. Professor Sebastian Eeltink (Vrije Universiteit Brussel (VUB), Belgium)
- Successful Generic Approaches for Heartcutting 2DLC with Focus on User-friendliness. Mrs Isabelle François (Waters, Belgium)

The afternoon session selected for review was on 'New Method Development Strategies and Chemometrics' chaired by Dr Achim Treumann (Newcastle University, UK) featured four oral presentations which were given by Dr Stefan Lamotte (BASF SE, Germany) on the 'Bridges over Troubled Waters: Strategies for HPLC method Development of Complex Samples' who discussed why multidimensional LC is impractical, time consuming and expensive and supported the concept of 'Peak Recycling Chromatography' where as soon as a fraction leaves a column it is switched to a second and back to the first and so on.

- On the Use of Bayesian Methods for Automated Data Analysis. Dr Gabriel VIVO Truyols (University of Amsterdam, The Netherlands)
- Nano UHPLC-ESI-MS/MS for the In Vivo Monitoring of Neuropeptides in the Rodent Brain. Professor Ann Van Eeckhaut (Vrije University Brussels (VUB), Belgium)
- Peaks Behaving Badly: Application of 2D-LC to Determine and Control the Reactivity of Samples of a Drug Product Under Different Analytical Conditions During Method Development. Dr Claudio Brunelli (Pfizer, United Kingdom)

After the final presentation on Wednesday evening a Belgian Beer tasting (sponsored by Shimadzu) was held in conjunction with the poster viewings. The area was rather narrow and made for a cosy atmosphere where everyone mingled, sampled the beers and enjoyed passed hors d'oeuvres, all whilst talking hyphenated chromatography.

On Thursday morning, to 'honour individuals deserving special recognition of their innovation or influential work in the field of Separation Science', the John Knox award was presented by John Langley (RSC) to Dr Keith Bartle (University of Leeds, UK) who captivated the packed auditorium with a fascinating trip down SFC memory lane with a plenary lecture on SFC – No Regrets. Keith very adeptly recalled how in 1958 he started in chromatography after reading the 'Golan paper on Capillary GC' and moved on to his utilisation of SFE for Taxane extractions and then Capillary SFC "where it all started to go wrong". He then recalled packed column SFC and the collaborations which led to a unified chromatograph which comprised of GC/SFC/HPLC all in one unit. He then covered a range of applications – commented on the future of SFC and then thanked all his students, graduate students, post doc's and collaborators, a veritable who's who of chromatography, for helping him over the years.

During the subsequent selection of one of the three parallel sessions before the morning coffee break, 'The power of Hyphenation' was discussed in two keynote lectures including:

- Hyphenated Techniques for Organic and Inorganic Analysis in Order to Ensure Patient Safety. Dr David Clicq (UCB Pharma, Belgium)
- Smaller, Better, Faster - Strategies for Metabolite Profiling and Phenotyping. Professor Ian D. Wilson (Imperial College London, UK)

The post break session selected covered, Fundamentals in separation science, with a tutorial and oral presentations:

- Description and Prediction of the Shape of Chromatographic Peaks: A Tutorial. Dr Wim Kok (University of Amsterdam The Netherlands)
- Assessment of Intra-particle Diffusivity in Hydrophilic Interaction Chromatography (HILIC) and Reversed-phase Liquid Chromatography (RPLC) under Conditions of Identical Packing Structure. Professor Deirdre Cabooter (KU Leuven, Belgium)
- The Art of Column Thermostatting in the Presence of Frictional Heating? Dr Frank Steiner (Thermo Fisher Scientific, Germany)
- Simpler, Better, Faster - The Hyphenated Potential of Planar Chromatography. Professor Gertrud Morlock, (Justus Liebig University Giessen, Germany).

The Thursday afternoon, three parallel sessions, covered Biological Sample Preparation, Food Analysis and BioAnalysis with the day culminating in 'the battle of the guru's' where Dr Pat Sandra, Professor Alexander Makarov and Professor Peter Schoenmakers during a sometimes lively and humorous debate vied for the 'head guru' position over a bottle of wine.



The Battle of the Guru's

The HTC-14 Conference Dinner was held on Thursday Evening and was the main social event of the symposium.

The opening session on the Friday, saw a lifetime-achievement-award presented to Hernan Cortes (H.J. Cortes Consulting LLC/Dow Chemical (Retired), USA). The criteria for this award are "for outstanding achievements in hyphenated techniques in chromatography and for distinguished service to the international chromatographic community". The award was presented by Dr John Langley, president of the scientific committee.



Hernan Cortes receiving the award

Hernan Cortes in receiving the award discussed "An academic mentality in an industrial environment" and how the end result of research, whether conducted in academia or industry is the same – despite very different approaches and philosophies.

The following session selected for review was on 'Novel Separation Systems' chaired by Dr Frank Sobott (University of Ghent, Belgium) featured four short fifteen minute oral presentations. The oral presentations were as follows:

- Extending the Performance of Microfluidic Membrane Suppressors and Hyphenation with On-Chip Conductivity Detection for Ion-Exchange Chromatography. Ing. Sam Wouters (VUB, Belgium)
- Prospects of Flow Field Thermal Gradient GAS Chromatography (FF-TG-GC). Dr Peter Boeker (University of Bonn, Germany)
- Design Aspects for the Construction of a Microfluidic Device for Comprehensive Spatial Three-Dimensional Liquid Chromatography. Ing. Bert Wouters (Universiteit van Amsterdam, The Netherlands)
- Vacuum Ultraviolet Spectroscopy as a Complementary Detection System to Mass Spectrometry for One- and Comprehensive Two-Dimensional GAS Chromatography. Mr Thomas Gröger (Helmholtz Zentrum München, Germany).

The final award presented during the closing session on Friday afternoon – the HTC award, was presented to Professor Paola Dugo, University of Messina, Italy). The nomination was based on the lecture 'Hyphenated chromatography techniques for complex analysis of lipid samples', judged to be the most valuable and innovative contribution of the conference.

Poster prizes were also presented, the first and second of which were awarded to Morgan Sarrut, (University of Lyon, France) and Sam Wouters, (Free University Brussels, Belgium) for




Hernan Cortes

Mark Schure spoke to LCGC Europe's Lifetime Achievement Award winner, Hernan Cortes, about his career with Dow Chemical, multidimensional chromatography, the evolution of mass spectrometry (MS), and the direction that liquid chromatography (LC) is taking.

Mark Schure: When did you first learn about chromatography and when did you first get involved in practice?

Hernan Cortes: I know it's a cliché but my parents bought me a chemistry set at an early age. I am a fortunate individual in that I found my calling early in life. I became interested in chromatography in the organic chemistry laboratory, where we essentially reproduced Tswett's gravity column experiment, and it intrigued me. My first assignment at Dow was in size-exclusion chromatography (SEC), followed by gas chromatography (GC) and liquid chromatography (LC).

MS: What brought you to Dow Chemical?

HC: While studying for my BS degree in chemistry at the Florida International University in Miami, USA, Dow was recruiting for a summer internship. I was offered an opportunity, and, after completing the assignment, was offered a permanent position. I proposed to my wife, Sandra, at the same time and suggested we could move to Michigan, spend a couple of years with Dow because it would look good on the CV, and then find a job somewhere warm. As it turned out, I had a wonderful, fulfilling career and we have been in Michigan for 38 years!

The company was at the time very supportive of research and encouraged analytical personnel to find an area of study and provided the resources needed. It was understood that research efforts, although encouraged, would take place in addition to fulfilling the requirements of the current job so one had to invest personal time to accomplish this. Dow at the time was well known for chromatography

development, with inventions such as gel permeation chromatography (GPC) leading to the formation of Waters Corp. and ion chromatography (IC) leading to the formation of Dionex. Interest in hydrodynamic chromatography (HDC), indirect photometric chromatography (IPC), high performance liquid chromatography (HPLC), and capillary GC made it a fertile environment. It helped that the corporation considered analytical chemistry a competitive advantage and invested in its growth. It should not be a surprise why the "couple of years" proposition mentioned above was not fulfilled.

MS: What is it about chromatography and separations that you find interesting and challenging?

HC: The fundamentals are as complex as any other analytical branch, but the ease of use makes the technology the most widely used analytical tool. One doesn't need fundamental knowledge to operate a chromatographic instrument, but without it it's difficult to be creative, so for me it offered practical applications with the ability to delve into the fundamentals. It's also interesting to continue to hear that chromatography has reached a plateau. If I look at a current GC instrument, and compare it to the first GC I ever used, multiple developments are present that, although incremental, make today's instrumentation much more powerful. In LC we can see the same. We are approaching theoretical limits in one dimension, with better instrumentation, sub-2- μm packings, and core-shell particles. Multidimensional chromatography continues to grow and evolve, offering significant opportunities for problem-solving and knowledge generation.

MS: Why do you think that publishing is necessary as a scientist who has worked mostly in industry?

HC: Documentation is part of the scientific method, and as such it is important to publish scientific results. In industry, much of the information generated is considered proprietary, therefore is not suitable for external publication in peer-reviewed journals. However, there are many opportunities to publish technology-based papers without revealing intellectual property as long as this activity is supported. A scientist in industry can have a successful fulfilling career without publishing in peer-reviewed literature, because in industry the value provided is determined in a shorter term and is measurable. This is in contrast to academia, where "publish or perish" is an ancient but true statement. Perhaps this is why industry scientists, with very few exceptions, are not as widely recognized as academics in our field. In my case, I have found great satisfaction in publishing and sharing information for the scientific community to benefit, which is part of our responsibility as scientists. There are many ways to teach and this is a good medium for doing so. I feel I have been able to make contributions to the field as well as learn from it. Publishing also led to the opportunity to complete my studies and to receive my Ph.D. from Stockholm University, Sweden, with Prof. Bjorn Josefsson. The company was very supportive of this effort and provided the resources to accomplish this, albeit once again using a lot of personal time.

MS: Why did you publish your book on multidimensional chromatography? It seemed so ahead of its time on reflection (1).

HC: I had written a chapter for

LC•GC EUROPE LIFETIME ACHIEVEMENT AWARD

Hernan J. Cortes joined Dow in Midland, Michigan, USA, in 1978 as an analytical chemist and held a number of positions in various analytical sciences groups including polymer characterization, inorganic analysis, organic analysis, agricultural chemicals, and pharmaceuticals, eventually becoming technical leader for the global organization. Hernan's technology expertise lies in separation science, with an emphasis on gas, liquid, supercritical, and

multidimensional chromatography development.

He retired from Dow in 2009 and formed Hernan J. Cortes Consulting, LLC., providing services in separation science. He is an Adjunct Professor at the University of Tasmania, Hobart, Australia. He is currently performing research with Michigan State University, USA and the University of Messina, Italy.

Hernan is the author of over 80 external publications in peer-reviewed journals, 17 patents, and editor of

the first ever book on the subject of *Multidimensional Chromatography* (3,4).

Hernan holds a B.S. in chemistry from Florida International University, Miami, USA, and a Ph.D. in analytical chemistry from the University of Stockholm, Sweden.



Frank Yang's book on *Microcolumn Separations* (2), mainly relating to LC×GC using microcolumns in the first dimension, and was approached by Marcel Dekker regarding editing a book. Since there was not a single book at the time collecting current information about multidimensional chromatography, it seemed like a good opportunity to contribute and collect the relevant information in one volume. I wrote two chapters and I was fortunate to have fantastic chapter contributors. I was honoured that Prof. Giddings agreed to write the introductory chapter, which colleagues have told me is a "must read" in the field. I strived to cover as many aspects of multidimensional chromatography as were known at that time. Looking back, I don't know what possessed me to undertake that project, because it was largely done during personal time. However, I am happy I did it because it was, for a time, a unique resource.

MS: What are the issues still present in the evolution of two-dimensional chromatography?

HC: The field has evolved significantly since the publication of our book (1). The advent of the comprehensive approach has yielded a wealth of information for very complex matrices analyzed both in the gas and liquid phase. Having said that, I believe multidimensional chromatography, where we are interested in only a region of the first dimension separation as opposed to the total as in the comprehensive approach, still has a lot of power for problem solving and is perhaps under-utilized. We can generate gorgeous contour plots, but the need remains for data interpretation and deciding what

to do with so much information. Further efforts in quantitation and data mining are still needed. We still have unutilized separation space in the comprehensive approach. In regards to applications, there are and will continue to be many. Continuing to reduce the analysis time and instrument costs will offer increased acceptance by the chromatographic user community.

MS: You practised supercritical fluid chromatography (SFC) in a time when it was still looking for problems to solve. What is your present view on SFC and do you think it will be accepted this time around?

HC: Our experience with SFC was in the early stages, when the technology was practised in capillary columns more akin to GC than LC. Unified chromatography was thought to be possible with these expanded operating conditions. From a research point of view, we were fortunate to have Prof. Milton Lee as a consultant at Dow during that time, and we were able to develop a number of applications as well as the use of silica structures now known as monoliths as frits for microcolumn LC and as multipath decompression devices for SFC, to reduce the problems with single-point restrictors.

From a practical point of view, SFC was thought (as with any emerging technology) to be applicable to a larger number of applications than was actually the case. The reality is that SFC was applicable to perhaps 5% of the systems we studied. Thus it became a niche technology.

The current approach to SFC is more akin to LC and can better incorporate

the use of modifiers to expand the technology's utility. Will it replace LC or GC? I don't believe so. This does not mean there isn't great value when used judiciously. Another driving force today is a question of costs and environmental concerns (solvents). SFC used carbon dioxide primarily, which is less expensive than conventional LC solvents, and has less issues with toxicity and disposal. I have always considered SFC complementary to LC and GC rather than competitive, and we used it where it was most appropriate.

MS: Regarding training a new generation of chromatographers, will the use of mass spectrometry (MS) dominate the analytical chromatographer and be thought of as another column?

HC: Chromatographers thought of MS as detectors for the separation, while MS practitioners thought of chromatography as a sample introduction system for their MS. Today, chromatographers understand MS as more than just detection, with developing skills in interpretation and database usage, and spectroscopists practise chromatography development as an integral part of the analytical system. I believe the techniques are merging. In fact, future generations of chromatographers will use MS more as a separation dimension. Chromatography also suffers from the fact that it is easy to perform for someone without fundamental understanding of the process. A practitioner can inject a sample into a chromatograph and produce data without having an understanding of the fundamental process. Peaks can be quantitated with standards, etc. In MS, a practitioner without knowledge of

LC•GC EUROPE LIFETIME ACHIEVEMENT AWARD

Mark R. Schure is Chief Technology Officer of Kroungold Analytical, a consulting company he founded in 2012. He received his B.S. from Northeastern University, his Ph.D. from Colorado State University, and performed his postdoctoral study at the University of Utah. He joined the science group at Digital Equipment Corporation in 1984 and performed research at the Rohm

and Haas Company for 23 years in computational, physical, and analytical chemistry research.

He has been Adjunct Professor of Chemical Engineering at the University of Delaware since 1995. His contributions to separation science include performing detailed theory, simulations, and experimental investigations in liquid chromatography (LC), capillary electrophoresis (CE),

and field-flow fractionation (FFF). He has published over 100 papers, one book on two-dimensional (2D) chromatography, and has presented numerous short courses on 2D chromatography.



fragmentation and organic chemistry, can search databases and come up with proposed structures. However, this is dangerous because databases can be misleading. From the perspective of productivity, younger scientists will probably place more effort on the MS side, which may lead to less focus on chromatography development. The debate concerning deconvolution versus separation will always exist, fortunately. This is a personal opinion. Some practitioners have believed that eventually separations will not be necessary because deconvolution models could yield the information needed. I don't believe progress in deconvolution models have yet or will make separation obsolete in my lifetime. But the efforts are very important to future understanding and growth. By more fully utilizing MS information with advanced software, it is statistically possible to defuse peaks that single channel detectors would miss entirely. With regards to dimensionality, MS offers that degree particularly in information content and will be seen this way more commonly in the future.

MS: Do you think industry regards the analytical chemist as a problem solver?

HC: During my tenure at Dow, analytical chemists were always considered an integral part of the development and problem-solving teams. If one cannot measure well, how can one understand and solve a problem? Having said that, a large portion of an analytical chemist's efforts revolves around data generation. Translating this data into new information and knowledge should be an important part of the analyst's responsibilities, and requires knowledge of chemistry, be it organic, polymer, bio, catalysis, etc.

My experience consulting with small venture capital companies after retiring from Dow indicate that analytical science is valued and necessary for success. Since I have been retired for seven years, I cannot offer an opinion on how large corporations view this issue today.

MS: Do you think liquid chromatography needs smaller particles and higher pressures or do you think the technology is near the end of development?

HC: LC has certainly evolved from the time I first started in the field. Particle sizes of 10 μm were the norm, and I remember drawing baselines by hand and measuring peak heights from strip chart recorders! Today we are approaching theoretical limits, software is incredibly sophisticated, and injection and detection systems have been optimized. I believe further development will continue, in the direction of stationary phase design, miniaturization, and portability. With regards to further particle size reduction and operation at even higher pressures, I am not convinced the effort necessary to operate at particle sizes of 1 μm or less is the most productive approach. I have an interest in using temperature for improving resolution and we developed low thermal mass LC to allow the use of linear and oscillating temperature gradients; we have also used temperature pulses to facilitate the separation of unresolved components (5). I believe temperature is the "orphan" variable in LC and is underutilized. As a result of thermal mass limitations, we conducted our research in this area with packed fused silica microcolumns. This is a limitation because many practitioners want to use conventional size, off-the-shelf

columns. I believe there are opportunities in this area that may be worthwhile pursuing rather than concentrating on further particle size reduction. Having said that, there are temperature limitations to some of the current media that require further research and development.

From a different perspective, when column efficiency or selectivity were not sufficient to separate components of interest, I turned to multidimensional chromatography, focusing on selectivity differences as an easier way to obtain required resolution rather than longer, smaller particle columns to increase efficiency.

MS: For chromatographic sciences what are the best conferences to attend?

HC: This is dependent on one's interests. Certainly the HPLC meeting and the ISCC meeting are very productive and the most attended in the separations field. Pittcon is another one, broader in scope but very useful especially for younger practitioners every few years. Some of the more specialized conferences such as HTC and GC×GC are also very useful; there is value in concentrating more specialized technologies in one conference. For me, ISCC holds a special place, because the 6th edition was the first conference I attended where I had a presentation. I was particularly thrilled to meet in person a number of separation scientists whose work I admired and knew only from the literature, such as Profs. Novotny, Giddings, Ishii, Sandra, Cramers, and many others. It was particularly gratifying to have professors visit your poster and discuss science at leisure. This was also my first publication in multidimensional chromatography, using LC×GC. That experience taught

LC-GC EUROPE LIFETIME ACHIEVEMENT AWARD

Herman Cortes embarks on an early chromatography experiment.



me the value of interacting in the global separations community. Those were great learning experiences and a strong motivator for furthering efforts in my research, publishing and presenting my results. HTC is also special for me, and I am honoured to have worked with my friends Dr. Robert Smits and Dr. Rudy Senten in the Organizing

and Scientific committees of this symposium.

MS: Do you have any advice for separation scientists at the beginning of their careers?

HC: Yes. I have a number of thoughts on this that I figured out over the years. First, you must never stop learning and teaching. This is important because it keeps you questioning some of the basics about the science and makes you listen to yourself and others. Next, there is no "normal" path to a career. It is highly influenced by the projects and people who surround you. "Normal" is a setting on a washing machine or dryer. I have also found that there are essentially three ingredients to a successful career: intelligence, hard work, and luck. For most situations, two out of three don't make it. Finally, I have found that practising good time management is a skill that develops over time but is absolutely critical for success; time is the only commodity you can never get back.

References

- (1) H.J. Cortes, Ed., *Multidimensional Chromatography Techniques and Applications* (Marcel Dekker, N.Y., USA, 1990).
- (2) H.J. Cortes, in *Microbore Column Chromatography*, F. Yang, Ed. (Marcel Dekker N.Y., USA, 1988), p. 212.
- (3) H.J. Cortes and J. L. Davies, *LC/GC*, **3**, 276 (1989).
- (4) M. Pursch, A. Schweizer-Theobald, H. Cortes, H. Schulenberg, A. Gratzfeld, and B. Hoffmann, *LCGC Europe* **21**, 152-159 (2008).
- (5) B. Gu, H.J. Cortes, J. Luong, M. Pursch, P. Eckerle, and R. Mustacich, *Anal Chem.* **81**, 1488-1495 (2009).

About the Award

The *LCGC Europe* Lifetime Achievement Award winner was selected by the HTC-14 Conference Committee in collaboration with *LCGC Europe*. The award recognizes "outstanding achievements in hyphenated separation techniques and distinguished service to the international chromatography community".

ANNEX 2 – Scientific programme

SHORT COURSE: Hyphenated Techniques in Supercritical Fluid Chromatography (Tuesday 26 January 2016)

- Prof. Ken Broeckhoven (VUB, Belgium)
Introduction and Fundamentals
- Prof. Caroline West (University of Orléans, France)
Selectivity and Retention Mechanisms in SFC
- Prof. Davy Guillarme (University of Geneva, Switzerland)
SFC in Pharmaceutical Analysis
- Prof. John Langley (University of Southampton, United Kingdom)
Possibilities and Limitations of the Hyphenation of SFC with Mass Spectrometry
- Dr Isabelle François (Waters Corporation, United States)
Multidimensional Hyphenation of SFC and SFC-MS
- Prof. Frederic Lynen (Ghent University, Belgium)
Multidimensional Separation with SFC and wrap up

LECTURES, DISCUSSION SESSION, VENDOR SEMINARS and INDUSTRY PITCHES (Wednesday 27 – Friday 29 January 2016)

- PLENARY LECTURES

PL01 – ***Building the Ideal Chromatography System: Why, What and How***

Prof. Gert Desmet (Vrije Universiteit Brussel (VUB), Belgium)

(originally scheduled as keynote lecture 19; presented as plenary lecture in substitution for the cancelled lecture of Prof. Jim Jorgenson, University of North Carolina, Chapel Hill, United States: *Analysis of Proteins by RPLC-Immobilized Enzyme Reactor-RPLC Coupled to MS-MS*)

PL02 - ***The Power of LC-MS and LCxLC in the Characterization of Recombinant Proteins, Monoclonal Antibodies and Antibody-drug Conjugates***

Dr Koen Sandra (Research Institute for Chromatography, Kortrijk, Belgium)

PL03 - ***SFC : No Regrets***

Prof. Keith Bartle (University of Leeds, United Kingdom)

PL04 - ***The LCGC Lifetime Achievement Award: An Academic Mentality in an Industrial Environment***

Dr Hernan Cortes (H.J. Cortes Consulting LLC / Dow Chemical Ret., Midland, United States)

PL05 - ***Advances in LC and SFC analysis***

Prof. Jean-Luc Veuthey (University of Geneva, Switzerland)

PL06 - ***Orbitrap Mass Spectrometry and Chromatography: the Road to a Perfect Marriage***

Prof. Alexander Makarov (Thermo Fisher Scientific, Bremen, Germany)

- **BATTLE OF THE GURU'S**

Discussion session about the importance of efficiency, selectivity and sensitivity in hyphenated chromatography between:

- Prof. Peter SCHOENMAKERS (University of Amsterdam, The Netherlands)
(in substitution for Prof. Jim Jorgenson, University of North Carolina, Chapel Hill, USA)
- Prof. Alexander MAKAROV (Thermo Fisher Scientific, Bremen, Germany)
- Prof. Pat SANDRA (Research Institute for Chromatography, Kortrijk, Belgium)
- with Deirdre Cabouter (KU Leuven) and Joeri Vercammen (Interscience) as moderators



Left to right: Deirdre Cabouter, Peter Schoenmakers, Joeri Vercammen, Alexander Makarov and Pat Sandra

- **KEYNOTE LECTURES**

KL01 - *Expanding GCxGC Hyphenation*

Prof. Robert Shellie (University of Tasmania, Hobart, Australia)

KL02 - *Detailed Crude Oil Analysis: GCXGC, Field Ionization Mass Spectrometry and Fourier Transform Ion Cyclotron Resonance Mass Spectrometry Join Forces*

Prof. Kevin Van Geem (Ghent University, Belgium)

KL03 - *Towards Hyperformance Two-Dimensional Liquid Chromatography*

Prof. Peter Schoenmakers (University of Amsterdam, The Netherlands)

KL04 - *Hyphenation of Intact Protein Separation and Mass Spectrometry for Characterization of Biopharmaceuticals*

Prof. Govert Somsen (VU University Amsterdam, The Netherlands)

KL05 - *Application of GCxGC-TOFMS and GCxGC-High Resolution TOFMS for Detection of Petrochemical and Particulate Matter (PM) Samples*

Prof. Ralf Zimmermann (U. Rostock & Helmholtz Zentrum München, Germany)

KL06 - *Shapes, Sizes and More - Ion Mobility for Sample Separation and Characterization*

Prof. Frank Sobott (University of Antwerp, Belgium)

KL07 - *Bridges over Troubled Waters: Strategies for HPLC Method Development Of Complex Samples*

Dr Stefan Lamotte (BASF SE, Ludwigshafen, Germany)

KL08 - *On the Use of Bayesian Methods for Automated Data Analysis*

Dr Gabriel Vivo Truyols (University of Amsterdam, The Netherlands)

KL09 - *Is the Claimed State-of-the-art GCxGC Overshadowing the Power of Heart-cut Twodimensional GC?*

Dr Frank David (Research Institute for Chromatography, Kortrijk, Belgium)

KL10 - *New Applications of Laboratory Chromatographs as Automated Online-Analyzers for Wastewater Analysis*

Dr Monika Wortberg (BASF SE, Ludwigshafen, Germany)

KL11 - *Selective Ionisation with High Resolution Mass Spectrometry ? The Future for Hyphenation in the Petrochemical Industry?*

Dr Tom Lynch (BP Global Lubricants Technology, Reading, United Kingdom)

KL12 - *High-Sensitivity Bioanalysis of Proteins by LC-MS/MS Without the Use of Antibodies*

Prof. Rainer Bischoff (University of Groningen, The Netherlands)

KL13 - *Hyphenated Techniques for Organic and Inorganic Analysis in Order to Ensure Patient Safety*

Dr David Clicq (UCB Pharma, Braine L'Alleud, Belgium)

KL14 - *Smaller, Better, Faster - Strategies for Metabolite Profiling and Phenotyping*

Prof. Ian D. Wilson (Imperial College London, United Kingdom)

KL15 - *Modern Liquid Chromatographic Approaches for the Analytical Characterization of Biopharmaceuticals*

Dr Davy Guillarme (University of Geneva, Switzerland)

KL16 - *Assessment of Intra-particle Diffusivity in Hydrophilic Interaction Chromatography (HILIC) and Reversed-phase Liquid Chromatography (RPLC) under Conditions of Identical Packing Structure*

Prof. Deirdre Cabooter (KU Leuven, Belgium)

KL17 - *Sample Preparation for Metabolic Phenotyping*

Prof. Ian D. Wilson (Imperial College London, United Kingdom)

(in substitution for the cancelled lecture of Dr Sheelan Ahmad, GSK, Hertfordshire, United Kingdom: *Solid Phase Micro-Extraction, Sketching the Future of Microsampling in Bioanalysis*)

KL18 - *Towards More Generic Methods for Food Analysis*

Prof. Hans-Gerd Janssen (Unilever Research Vlaardingen, The Netherlands)

KL19 (see plenary lecture PL-01)

KL20 - *Macro and Micro-Scale Methods Using Large Volume Injections and Heart-Cutting 2D-LC for Ultrahigh Sensitivity Bioanalysis*

Dr Filip Cuyckens (Johnson & Johnson Pharmaceutical, Beerse, Belgium)

KL21 - *In-depth Analysis of Complex VOC Mixtures by GCxGC-HRTOFMS*

Prof. Jean-François Focant (University of Liège (ULG), Belgium)

KL22 - *Detection and Quantification of Anthrax Toxins by Immunoaffinity and Mass Spectrometry*

Dr John Barr (Centers for Disease Control And Prevention, Atlanta, United States)

KL23 - Miniaturized and Selective Monoliths Coupled on Line to Nanolc for the Determination of Target Analytes at the Trace Level in Complex Samples

Prof. Valérie Pichon (Ecole Supérieure de Physique et de Chimie industrielles de la Ville de Paris (ESPCI), France)

KL24 - Modern SFC: Current State and Future Prospects

Dr Caroline West (University Of Orléans, France)

KL25 - UPC2 Coupled to both Inorganic and Organic Mass Spectrometers

Mr Christopher Hopley (LGC, Teddington, United Kingdom)

KL26 - Theory, Practice and Applications of Comprehensive 2-Dimensional Hydrophilic Interaction Chromatography X Reversed Phase Liquid Chromatography

Prof. André De Villiers (Stellenbosch University, South Africa)

KL27 - A Critical Appraisal of Micro Liquid Chromatography in One- and Two-Dimensional Applications Coupled to Mass Spectrometry

Dr Thorsten Teutenberg (Institut Für Energie- Und Umwelttechnik E.V., Duisburg, Germany)

- **ORAL COMMUNICATIONS**

OC01 - Flow-Modulation Comprehensive Two-Dimensional Gas Chromatography-Mass Spectrometry Using ≈ 4 mL/min Gas Flows

Prof. Peter Tranchida (University of Messina, Italy)

OC02 - Improvement of Retention Time Prediction in Liquid Chromatography

Dr Roman Szucs (Pfizer, Sandwich, United Kingdom)

OC03 - Kinetic Gain Factors And Peak-Compression Effects In Ultra-High-Pressure LC

Prof. Sebastiaan Eeltink (Vrije Universiteit Brussel (VUB), Belgium)

OC04 - Successful Generic Approaches for Heartcutting 2DLC with Focus on Userfriendliness

Dr Isabelle François (Waters, Zellik, Belgium)

OC05 - HPLC with Drift-Tube Ion Mobility and Time-of-Flight Mass Spectrometry: Assessment of Separation and Feature Alignment/Annotation Capabilities

Dr Tim Causon (University of Natural Resources And Life Sciences, Vienna, Austria)

OC06 - Liquid-Junction Based CE/MS Interfacing for Proteomic, Glycomic and Metabolomic Analyses

Dr Jana Krenkova (Institute of Analytical Chemistry of the CAS, V.V.I., Brno, Czech Republic)

OC07 - Nano UHPLC-ESI-MS/MS for the In Vivo Monitoring of Neuropeptides in the Rodent Brain

Prof. Ann Van Eeckhaut (Vrije Universiteit Brussel (VUB), Belgium)

OC08 - Peaks Behaving Badly: Application of 2D-LC to Determine and Control the Reactivity of Samples of a Drug Product Under Different Analytical Conditions During Method Development

Dr Claudio Brunelli (Pfizer, Sandwich, United Kingdom)

OC09 - ***Chemically Sensitive SEC Detection with FTIR and Low Field NMR Spectroscopy***

Prof. Manfred Wilhelm (Karlsruher Institut Für Technologie (KIT), Germany)

OC10 - ***Ultratrace Analysis of Oxygenates***

Dr Joeri Vercaemmen (Interscience, Louvain-la-Neuve, Belgium)

OC11 - ***Characterizing the Smell of Marijuana with Multidimensional Gas Chromatography – Mass Spectrometry - Olfactometry***

Dr Jacek Koziel (Iowa State University, Ames, United States)

OC12 - ***GC×GC-TOF MS with Soft Electron Ionisation for Enhanced Characterisation of Allergens in Cosmetics***

Dr Laura McGregor (Markes International, Llantrisant, United Kingdom)

OC13 - ***Capillary Electrophoresis Supporting Viral Vaccine Development***

Dr Cari Sanger (Kantisto, Baarn, The Netherlands)

OC14 - ***Can UHPLC High Speed Separations be Employed in a Multidimensional Approach for Bio Therapeutic Protein Analysis?***

Dr Ken Cook (Thermo Fisher Scientific, Newcastle upon Tyne, United Kingdom)

OC15 - ***The Art of Column Thermostatting in the Presence of Frictional Heating?***

Dr Frank Steiner (Thermo Fisher Scientific, Germering, Germany)

OC16 - ***Simpler, Better, Faster - The Hyphenated Potential of Planar Chromatography***

Prof. Gertrud Morlock (Justus Liebig University Giessen, Germany)

OC17 - ***Dried Blood Microsamples in the Bioanalytical Lab***

Prof. Christophe Stove (Ghent University, Belgium)

OC18 - ***Development of a Low Volume Dispersive Liquid-Liquid Microextraction Method for Simultaneous Determination of Illicit Psychoactive Drugs in Blood***

Dr Stefan Louw (University of Namibia, Windhoek, Namibia)

OC19 - ***UHPLC Coupled to Hybrid High Resolution MS for Digestion Metabolomics and DNA Adductomics***

Prof. Lynn Vanhaecke (Ghent University, Merelbeke, Belgium)

OC20 - ***Hyphenation of Asymmetrical Flow Field-Flow Fractionation (AF4) to ICP-MS for the Quantification of Protein Associated Metal Ions***

Dr Erwin Kaal (DSM, Delft, The Netherlands)

OC21 - ***Importance of Reference Conditions in SFC***

Dr Ruben De Pauw (Vrije Universiteit Brussel (VUB), Belgium)

OC22 - ***Metabolic Phenotyping of Mammalian Urine by SFC-HRMS***

Dr Arundhuti Sen (King's College, London, United Kingdom)

OC23 - ***Quantifying Target Compounds in Complex Matrices Using Multiple Heart-Cutting Two-Dimensional Liquid Chromatography***

Dr Stephan Buckenmaier (Agilent Technologies, Waldbronn, Germany)

OC24 - ***Hyphenated Chromatographic Techniques for Complex Analysis of Lipid Samples***

Prof. Paola Dugo (University of Messina, Italy)

• **'YOUNG & EMERGING SCIENTISTS' PRESENTATIONS**

YeS01 - ***Comparison of a Triple Quadrupole and a Quadrupole Time-of-Flight Mass Analyser to Quantify 16 Opioids in Human Plasma***

Mr Johan Viaene (Vrije Universiteit Brussel (VUB), Belgium)

YeS02 - ***Secondary Electrospray Ionization (SESI) and UHPLC Coupled to HRMS Allow the Identification and Quantification of Benzothiazoles in Exhaled Breath and Exhaled Breath Condensate***

Dr Diego García-Gómez (ETH Zürich, Switzerland)

YeS03 - ***Comparison of HILIC-MS and RPLC-MS Performance in Terms of Sensitivity and Matrix Effects***

Ms Aurélie Périat (University of Geneva, Switzerland)

YeS04 - ***Evaluation of a New API Source: Improved Sensitivity for Pharmaceutical Analysis***

Mr Arnaud Lubin (Janssen Pharmaceutica, Beerse, Belgium)

YeS05 - ***Evaluation of a New Strategy for the Simultaneous Analysis of Pharmaceuticals with a Broad Polarity Range in Water***

Mr Glenn Loos (KU Leuven, Belgium)

YeS06 - ***The Use of Both Liquid and Gas Chromatography Coupled to Mass Spectrometry in the Domain of Food Contact Materials: Migration of Phthalates and Cereals in Breakfast Cereals***

Ms Kathy Van Den Houwe (WIV-ISP, Brussels, Belgium)

YeS07 - ***In Vitro Monitoring of Human Tissues Degradation by TD-GC×GC-TOFMS***

Mr Pierre-Hugues Stefanuto (University of Liège, Belgium)

YeS08 - ***Mediating Chromatographic Dilution in One- and Two-Dimensional Liquid Chromatography by Post-Column Refocusing***

Mr Jelle De Vos (Vrije Universiteit Brussel (VUB), Belgium)

YeS09 - ***The Application of Acetone Acetals as Water Scavengers and Novel Derivatisation Agent Prior to the Gas Chromatographic Analysis of Polar Residual Solvents in Aqueous Samples***

Mr Niels Van Boxtel (KU Leuven, Belgium)

YeS10 - ***Synthesis of Molecular Imprinted Polymers for the Selective Extraction of Organophosphorous Pesticides in Vegetable Oils***

Ms Sara BoulanouAR (Ecole Supérieure de Physique et de Chimie industrielles de la Ville de Paris (ESPCI), France)

YeS11 - ***Effect of Polyethylene Glycol on Pore Structure and Separation Efficiency of Silica-Based Monolithic Capillary Columns***

Dr Takeshi Hara (Vrije Universiteit Brussel (VUB), Belgium)

YeS12 - Optimization of On-Column Trypsin Digestion Coupled with IDMS for Quantitative Analysis of Apolipoproteins

Dr Zsuzsanna Kuklenyik (Centers for Disease Control And Prevention, Atlanta, United States)

YeS13 - Development of Supercritical Fluid Chromatography Methods with Mass Spectrometry and U.V. Detection for the Characterization of Fast Pyrolysis Bio Oils

Mr Julien Crepier (IFPEN, Solaize, France)

YeS14 - Development and Validation of a Rapid Detection Method for Boar Taint by Means of Solid Phase Microextraction and a Person- Portable GC-MS

Ms Kaat Verplanken (Ghent University, Merelbeke, Belgium)

YeS15 - Isolation of Unknown Molecules from Plant Extracts Exploiting a Multidimensional GC-Prep System Followed By NMR, MS and FTIR for Structural Identification

Prof. Danilo Sciarrone (University of Messina, Italy)

YeS16 - The Power of Reverse Phase Comprehensive 2D GC for Oxygenate Analysis in Shale Oils

Ing Nenad Ristic (Ghent University, Belgium)

YeS17 - Characterization of Human Exhaled Breath for Non-Invasive Detection of Diseases by GC×GCTOFMS

Mr Romain Pesesse (University of Liège, Belgium)

YeS18 - Hyphenated Techniques in Clinical Sciences: GC×GC-HRTOFMS Approach in Metabolomics

Mr Nicolas Di Giovanni (University Of Liège, Belgium)

YeS19 - Combining the Full Potential of UHPSFCQTOF/MS and UHPLC-QTOF/MS for Efficient Natural Bioactives Analysis

Mr Alexandre Grand-Guillaume Perrenoud (University of Geneva, Switzerland)

YeS20 - In-Line Drug Metabolism System Using Enzyme Immobilized Magnetic Nanoparticles in Capillary Electrophoresis

Mr Pranov Ramana (KU Leuven, Belgium)

YeS21 - Quantitative Determination of Gadolinium Based Magnetic Resonance Imaging Contrast Agents in Urine and Hospital Wastewater by HPLC-ICP-QMS

Mr Karel Folens (Ghent University, Belgium)

YeS22 - New Approaches in High Temperature Stable Polymerized Ionic Liquids as Stationary Phase in Gas Chromatography

Mr Kevin Roeleveld (Ghent University, Belgium)

YeS23 - Varied Approaches (CCC, SFE) for the Enrichment of Bioactive Cosmetic Compounds from Plant Seeds and Identification by Ultra High Performance SFC-HRMS

Ms Johanna Duval (ICOA , Orléans, France)

YeS24 - Extending the Performance of Microfluidic Membrane Suppressors and Hyphenation with On-Chip Conductivity Detection for Ion-Exchange Chromatography

Ing Sam Wouters (Vrije Universiteit Brussel (VUB), Belgium)

YeS25 - Prospects of Flow Field Thermal Gradient GAS Chromatography (FF-TG-GC)

Dr Peter Boeker (University of Bonn, Germany)

YeS26 - Design Aspects for the Construction of a Microfluidic Device for Comprehensive Spatial Three-Dimensional Liquid Chromatography

Ing Bert Wouters (University of Amsterdam, Beverwijk, The Netherlands)

YeS27 - Vacuum Ultraviolet Spectroscopy as a Complementary Detection System to Mass Spectrometry for One- and Comprehensive Two- Dimensional Gas Chromatography

Mr Thomas Gröger (Helmholtz Zentrum München, Neuherberg, Germany)

YeS28 - Optimizing On-Line RPLCXRPLC-MS for both Peak Capacity Enhancement and Matrix Effect Reduction. Application to the Separation of a Protein Digest

Mr Morgan Sarrut (University of Lyon, Villeurbanne, France)

YeS29 - Drug/phospholipid polar/electrostatic Interactions Estimated by IAM-HPLC as Indexes of the Transcellular Passive Diffusion of Ionisable Drugs. Relationships with in situ and in vitro Intestinal Permeability Data

Mr Giacomo Russo (Ghent University, Belgium)

YeS30 - Insights into the Fundamentals of the Supercritical Fluid Extraction Process Using UV/VIS and Evaporative Light Scattering Detection

Mr Victor Abrahamsson (Lund University, Sweden)

YeS31 - Interpretive Optimization of Two-Dimensional Resolution for LC×LC Separations with Gradient Elution in Both Dimensions

Mr Bob Pirok (University of Amsterdam, The Netherlands)

- [WORKSHOP](#)

WS 01 - How to Write a Paper

Dr John Langley (University of Southampton, United Kingdom)

- [TUTORIALS](#)

TU01 - Optimisation of LCMS Conditions for Proteomics Experiments

Dr Achim Treumann (Newcastle University, United Kingdom)

TU02 - An Introduction to Biopharmaceutical Analysis

Presented by Dr Scott Fletcher (Crawford Scientific, Strathaven, United Kingdom) in substitution for Prof. David PERRETT, Queen Mary's University of London, United Kingdom

TU03 - Description and Prediction of the Shape of Chromatographic Peaks: A Tutorial

Dr Wim Kok (University of Amsterdam, The Netherlands)

TU04 - Sample Preparation for Bioanalysis in Clinical Laboratories: Practicalities and Considerations

Dr Lewis Couchman (King's College, London, United Kingdom)

TU05 - Hyphenated LC-MS and LCxLC-MS Techniques Reduce the Need for Extensive Sample Preparation for Accurate Analysis of Target Compounds

Prof. Luigi Mondello (University of Messina, Italy)

TU06 - Characterization and Analysis of the Efficiency and Speed of Chromatographic Columns

Prof. Ken Broeckhoven (Vrije Universiteit Brussel (VUB), Belgium)

- **VENDOR SEMINARS**

Wednesday 27 January 2016, 13:30 – 14:15

POSTNOVA ANALYTICS:

Field-Flow Fractionation and size exclusion chromatography: high resolution separation techniques for the comprehensive characterization of proteins, (bio)polymers and nanoparticles

SCIEX SEPARATIONS:

Hyphenation of low flow separations to mass spectrometry

Part 1 - *CESI-MS for Characterization of Intact Proteins*

Govert W. Somsen, VU Amsterdam, The Netherlands

Part 2 - *Improving Sensitivity in Bioanalysis using Trap-and-Elute MicroLC-MS*

Eike Logé, SCIEX, Germany

WATERS CORPORATION:

Ion mobility and REIMS ionisation technology - a new road to analytical success

Eric van Beelen (Waters SAS, France)

Thursday 27 January 2016, 13:30 – 14:15

SHIMADZU:

Smart hyphenated solutions to analyze highly complex samples

Screening and Quantification of Newly-regulated Allergens in Perfumes by Using GCxGC-qMS

Peter Tranchida (University of Messina, Italy)

SFC – MS Method Scouting for Novel Compounds

Gesa Schad (Shimadzu Europa, Germany)

LCxLC-MS and LC-MS/MS Analysis of Polar Lipids

Paola Dugo (University of Messina, Italy)

THERMO SCIENTIFIC:

High resolution liquid chromatography meets high resolution mass spectrometry: high resolution2

Advances in Ultra-High-Pressure Liquid Chromatography Technology and System Design

Sebastiaan Eeltink (Vrije Universiteit Brussel, Belgium)

New Nano LC Performance Levels for Proteomics Workflows

Remco Swart (Thermo Fisher Scientific, Germany)

- **INDUSTRY PITCHES**

At the end of the session “Emerging Technologies for Industry” on Wednesday 27 January 2016 at 16:30, industry pitches were presented by following companies :

IP01 – **KNAUER:**

Why spatially separate flow cell from detector? Key applications of KNAUER fiber optic technology

IP02 – **MARKES INTERNATIONAL:**

Complete characterisation of diesel exhaust emissions by GCXGC–TOF MS with soft electron ionisation

IP03 – **POSTNOVA ANALYTICS:**

A novel modular triple/tetra detection GPC/SEC system incorporating SEC-MALS: exploring molecular weight, molecular structure and chemical composition of polymers, polysaccharides, proteins and conjugates

IP04 - **SHIMADZU:**

SFE-SFC-MS – Unified chromatography: the latest addition to the chromatography toolbox

- **POSTERS**

(abbreviations: consult the table on p. 4; poster numbers followed by FP = poster flash presentation))

FS01 - *Use Of Drift-Tube Ion Mobility Spectrometry To Enhance HPLC-TOFMS Analysis Of Phenolic Extracts*

Marian Došen (1,2), Gottfried Reznicek (2), Stephan Hann (1), Tim Causon (1)

1) University of Natural Resources and Life Sciences (BOKU Vienna), Austria; 2) University of Vienna, Austria

FS02 - *Extending The Limits Of Operating Pressure In LC: Gradient Elution Up-To 2000 Bar*

Ruben De Pauw, Tim Swier, Bart Degreef, Gert Desmet, Ken Broeckhoven

Vrije Universiteit Brussel, Belgium

FS03 - *Development Of Ion-Imprinted Polymers For The Selective Extraction Of Lanthanide Ions*

Nathalie Delaunay (1), Manel Moussa (1), Thomas Pinta (1), Thomas Vercouter (2), Valérie Pichon (1,3)

1) CNRS/ESPCI ParisTech, France ; 2) CEA Saclay, Gif-sur-Yvette, France ; 3) Sorbonne Université, Paris, France

FS04 - *Condensation And Chain-Growth Polymerized Ionic -Liquids As High Temperature Stable Stationary Phase In Gas Chromatography*

Kevin Roeleveld, Frédéric Lynen

Ghent University, Belgium

FS05 - *New Developments For Novel Polymerized Ionic Liquids Based Spme Approach For Improved Analysis Of Volatile Polar Solutes*

Kevin Roeleveld, Frederic Lynen

Ghent University, Belgium

FS06 - *Vacuum Outlet GC/MS: A Good Choice Only For Semi-Volatile Organic Compounds ?*

Erwin Rosenberg, Chrysoula Kanakaki

Vienna University of Technology, Austria

FS07 - *Concept Of (Low-)Flow Modulation Comprehensive Two-Dimensional Gas Chromatography Under Sub-Ambient, Ambient And Supra-Ambient Pressure Outlet Conditions*

Mariarosa Maimone (1), Flavio A. Franchina (3), Peter Q. Tranchida (1), Luigi Mondello (1,2,3)

1) University of Messina, Italy; 2) University Campus Bio-Medico of Rome, Italy; 3) Chromaleont Messina, Italy

FS08 - *Transfer Of The Method For Related Substances Analysis Of Metoclopramide Hcl Between Different Lc Systems*

Eric S.E. van Beelen (1), Gert Martens (2), Margaret Maziarz (3), Mark Wrona (3)

1) Waters Corporation, St.Quentin, France; 2) Waters, Zellik, Belgium; 3) Waters Corporation, Milford, MA, USA

FS09 - *Improved Isomer Speciation By Gc-Tof Ms With Soft Electron Ionisation*

Nick Bukowski, Laura McGregor, Kevin Collins , Steve Smith

Markes International, Llantrisant, UK

FS10 - *SFC-MS Method Scouting For Novel Chiral Compounds*

Gesa Schad (1), Dennis van den Heuvel (2)

1) Shimadzu Europa GmbH, Duisburg, Germany; 2) Shimadzu Benelux, 's-Hertogenbosch, The Netherlands

FS11 - *Effect Of Pre- And Post-Column Band Broadening On The Performance Of High-Speed Chromatography Columns Under Isocratic And Gradient Conditions*

Kim Vanderlinden, Ken Broeckhoven, Gert Desmet

Vrije Universiteit Brussel, Belgium

FS12 - *Optimization Of Microfluidic Membrane Suppressor Designs For Ion-Exchange Chromatography: Characterization And Hyphenation With On-Chip Conductivity Detection*

Sam Wouters (1), Cees Bruggink (2), Christopher Pohl (3), Sebastiaan Eeltink (1)

1) Vrije Universiteit Brussel, Belgium; 2) Thermo Fisher Scientific, Breda, The Netherlands; 3) Thermo Fisher Scientific, Sunnyvale, CA, USA

FS13 - *The Usage Of Direct Inlet Probe In Combination With High Resolution Mass Spectrometry For The Fast Analysis Of Liquid And Solid Samples*

Juergen Wendt (1), Rolf Eichelberg (2)

1) LECO European Application&Technology Centre, Berlin, Germany; 2) SIM Scientific Instruments Manufacturer GmbH, Oberhausen, Germany

FS14 - *Problems Involving The Determination Of The True Band Broadening In Columns Producing Very Narrow Peaks*

Yoachim Vanderheyden, Kim Vanderlinden, Ken Broeckhoven, Gert Desmet

Vrije Universiteit Brussel, Belgium

ED01 - *Applying Post-Column Refocusing To Reduce Chromatographic Dilution In One-And Two-Dimensional Liquid Chromatography*

Jelle De Vos, Gert Desmet, Sebastiaan Eeltink

Vrije Universiteit Brussel, Belgium

ED02 - *Hyphenating Gas Chromatography With Insect Behaviour: An Ultrasensitive, General Detector System For Signal Compounds In Chemical Ecology*

Hans E. Hummel (1), Lyle K. Gaston (2)

1) Justus-Liebig University, Giessen, Germany; University of Illinois, Champaign, IL, USA; 2) University of California, Riverside, CA, USA.

ED03-FP04 *LED-Excited Intrinsic Fluorescence Detection Of Pharmaceuticals And Pollutants In μ -HPLC And CE*

Leonid Gitlin (1), Philipp Schulze (1), Thorsten Teutenberg (2), Juri Leonhardt (2)

1) Max-Planck-Institut f. Kohlenforschung, Mülheim a.d. Ruhr, Germany; 2) Institut für Energie- und Umwelttechnik, Duisburg, Germany

ED04 - Development Of A Photo Ionization Ion Source For A GC-High Resolution TOFMS System

Masaaki Ubukata (1), Robert B Cody (1), A. John Dane (1), Toshiyuki Kato (2), Masahiro Ito (2), Bram Vandermeer (3), Junichi Osuga (4), Jef Focant (5)

1) JEOL USA; 2) JEOL Ltd.; 3) JEOL (Europe) BV; 4) JEOL (Europe) SAS; 5) University of Liège, Belgium

HT01-FP02 - Targeted And Non-Targeted Screening Methods For Impurities In Risperidone Drug Substances And Finished Products With Qtrap Liquid Chromatography Tandem Mass Spectrometry System

Abdelhakim BOUNAB (1), Kamel MANSOURI (2), Mohamed Benslimane MANSOURI (2)

1) University of Blida-1, Algeria; 2) Laboratoire National de Controle des Produits Pharmaceutiques, Dely Ibrahim, Algeria

HT02 - Convergency Chromatography In Drug Discovery: Othogonality In Reality!

Michel Carpentier, Kristien Raeymaekers, David Corens

Janssen Research & Development, a division of Janssen Pharmaceutica, Beerse, Belgium

HT03 - Application Of Hyphenated Techniques To The Post Marketing Surveillance Of Products Dispensed By Belgian Pharmacists

Anna-Marie Gruyters, Julien Verrax, Jozef Corthout, Sophie Sarre

Belgian Pharmaceutical Association (APB), Brussels, Belgium

HT04-FP03 - Identification Of Basic Degradation Products Of Rifaximin Tablets By LC-MS/MS

Ana Carolina Kogawa (1), Jacqueline Nakau Mendonça (2), Norberto Peporine Lopes (2), Hérica Regina Nunes Salgado (1)

1) Universidade Estadual Paulista, Araraquara, São Paulo, Brazil

2) Universidade de São Paulo, Ribeirão, Preto, Brazil

HT05 - Comparison Of UHPLC-MS And UHPSFC-MS For Impurity Profiling Of Drug Candidates

Elise Lemasson (1), Sophie Bertin (2), Philippe Hennig (2), Eric Lesellier (1), Caroline West (1)

1) University of Orléans, France; 2) Institut de Recherche Servier, Suresnes, France

HT06 - Application Of The Agilent Automated Purification Software In High-Throughput Preparative HPLC-MS Purification Workflow Of Libraries Within The European Lead Factory

Raquel Ortega (1), Martyna Bielska (1), Xenia Iwanowa (1), Anna Karawajczyk (1), Danny van Oevelen (2), Andreas Tei (2)

1) Taros Chemicals, Dortmund, Germany; 2) Agilent Technologies R&D and Marketing; Waldbronn, Germany

HT07 - Benefits Of Using Mass Detection For Assessing Quality And Purity Of Cetrimonium Bromide Pharmaceutical Raw Material

Eric S.E. van Beelen (1), Kim de Kock (2), Margaret Maziarz (3), Mark Wrona (3), Dominic Moore (4), Chengxia O'Shea (4)

1) Waters Corporation, St. Quentin, France; 2) Waters, Zellik, Belgium; 3) Waters Corporation, Milford, MA, USA; 4) Genzyme A Sanofi Company, Northborough, MA, USA

HT08 - A Comparison Of Ion Suppression Across Flow Regimes And The Implications Of Reduced Suppression On Sensitivity And Assay Precision

Eric S.E. van Beelen (1), Jan Claereboudt (2), Jay S. Johnson (3), James P. Murphy (3), Paul D. Rainville (3)

1) Waters Corporation, St. Quentin, France; 2) Waters, Zellik, Belgium; 3) Waters Corporation, Milford, MA, USA

NM01-FP07 - Comparison Between 1D And 2D GC/MS Techniques In The Pyrolytic Determination Of S/G Rations For Wood And Lignin Samples

Gerardus J.W. Cremers (1,2), Stefan Voorspoels (1), Guido Vanermen (1), Ludo Diels (1,3)

1) Flemish Institute for Technological Research (VITO), Mol, Belgium; 2) Department of Bioengineering, University of Antwerp; 3) Department of Research Affairs & Innovation, University of Antwerp, Belgium

NM02 - Analysis Of Volatile Compounds In Complex Samples Using SH-MCC-GC-IMS

John Dean, Chamila Denawaka, Ian Fowlis

Northumbria University, Newcastle upon Tyne, UK

NM03 - Comprehensive Monitoring Of Volatile Organic Compounds In Breath Gas Profiles By GCXGC Hyphenated To TOFMS And VUV Spectroscopy

Beate Gruber (1), Thomas Gröger (1), Stefan Keller (3), Georg Matuschek (3), Dale Harrison (2), Ralf Zimmermann (1,4)

1) University of Rostock and the Helmholtz Zentrum München; 2) VUV Analytics; 3) Research Unit Medical Radiation Physics and Diagnostics; 4) University of Rostock, Germany

NM04 - Development Of A Rapid Screening Method For Chemical And Aroma Analyses Of Aroma-Enhancing Compounds In Iowa Wines Using Multidimensional Gas Chromatography - Mass Spectrometry - Olfactometry

Lingshuang Cai (1,5), Jacek Koziel (1,2,3), Somchai Rice (1,3), Murli Dharmadhikari (2,4)

1) Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA, USA; 2) Department of Food Science and Human Nutrition, Iowa State University, Ames, IA, USA; 3) Interdepartmental Toxicology Graduate Program, Iowa State University, Ames, IA, USA; 4) Midwest Grape and Wine Industry Institute, Iowa State University, Ames, IA, USA; 5) DuPont Crop Protection, Stine-Haskell Research Center, Newark, DE, USA, formerly with (1)

NM05-FP05 - Phase Optimized Chiral Liquid Chromatography (POPCLC) The Effective Novel Approach For Optimizing Separation Of Enantiomers

Ravindra Hegade, Frederic Lynen

Ghent University, Belgium

NM06-FP14 - (Low-)Flow Modulation Comprehensive Two-Dimensional Gas Chromatography For The Determination Of Suspected Allergens In Fragrances

Mariarosa Maimone (1), Flavio A. Franchina (3), Giorgia Purcaro (3), Peter Q. Tranchida (1), Luigi Mondello (1,2,3)

1) University of Messina, Italy; 2) University Campus Bio-Medico of Rome, Italy; 3) Chromaleont, Messina, Italy

NM07 - The Shortest Path From Bioactivity To Mass Spectrometry: Direct Bioautography Coupled To Dart-MS Scanning

Tim T. Häbe, Maryam Jamshidi-Aidji, Jennifer Macho, Gertrud E. Morlock

Justus Liebig University Giessen, Germany,

NM08 - Two- Dimensional Comprehensive Gas Chromatography Multi-Reflection High Resolution Time-Of-Flight Mass Spectrometry: A Unique Tool To Merge Accurate Mass Information With High Chromatographic Resolution

Juergen Wendt (1), Thomas Groeger (2), Ralf Zimmermann (2)

1) LECO European Application and Technology Centre, Berlin, Germany; 2) University of Rostock and Helmholtz Zentrum München, Germany

NM09 - Design Of Microfluidic Devices For Two-Dimensional Spatial Separations And Evaluation Of Flow Characteristics

Sam Wouters (1), Ekaterina Davydova (2), Sander Deridder (1), Gert Desmet (1), Peter Schoenmakers (2), Sebastiaan Eeltink (1)

1) Vrije Universiteit Brussel, Belgium; 2) University of Amsterdam, The Netherlands

NM10 - Efficient On-Line Liquid Chromatography Removal Of Olefin Interferences Prior To The Gas Chromatography Determination Of Mineral Oil Contamination In Vegetable Oils

Mariosimone Zoccali (1,2), Laura Barp (1,2), Marco Beccaria (1,2), Danilo Sciarrone (1), Giorgia Purcaro (2), Luigi Mondello (1,2,3)

1) University of Messina, Italy; 2) Chromaleont, Messina, Italy; 3) University Campus Bio-Medico of Rome, Italy

BS01-FP18 - Development And Characterization Of Immunosorbents For The Selective Extraction Of Butyrylcholinesterase From Human Plasma, Prior To Enzymatic Microreactor Digestion And Micro-LC/MS Analysis

Maud Bonichon (1), Audrey Combès (1), Charlotte Desoubries (2), Anne Bossée (2), Valérie Pichon (1)

1) ESPCI Paris Tech, PSL Research University, Paris, France; 2) DGA CBRN Defence, Vert-le-Petit, France ; 3) Sorbonne Universités, Paris, France.

BS02 - LR12-Peptide Quantitation In Whole Blood By RP-HPLC

Marianne Parent (1), Ariane Boudier (1), Sebastien Gibot (2), Hafid Ait-Oufella (4), Philippe Maincent (1), Marc Derive (3), Pierre Leroy (1), Igor Clarot (1)

1) Université de Lorraine, Nancy, France ; 2) Université de Lorraine, Vandoeuvre-lès-Nancy, France ; 3) INOTREM, Vandoeuvre-lès-Nancy, France ; 4) Université Paris 5, France.

BS03 - Evaluation Of A 96-Well Immunodepletion Platform For Multiplex LC-MS/MS Assay Of Proteins In Human Plasma

Gordon Nicol (1), Anders Fridström (2), Lillian Vickery (1), Thomas Juehne (1), Tracy Adair-Kirk (1), Christopher Melm (1), Jalili Pegah (1), Ray Kevin (1)

1) Sigma-Aldrich, St. Louis, MO, USA; 2) Sigma-Aldrich International, St Gallen, Switzerland

BS04 - Novel Micro Extraction Technique With Multi-Dimension Chromatography For Forensic Toxicological Analysis

Claude Mallet (1), Sabra Botch-Jones (2)

1) Waters Corporation, Milford, MA, USA; 2) Boston University, MA, USA

BS05 - Solid Phase Microextraction As A Tool For Free Concentration Measurements To Support In Vitro Assays.

Mike Pleasants, Beate Nicol, Alexandre Teixeira
Unilever, Sharnbrook, Bedfordshire, UK

BS06 - Improving Protein Digestion For IDMS

Sophie Thurlow, Kate Groves, Milena Quaglia, Chris Hopley
LGC, Teddington, Middlesex, UK

BS07 - LC/MS/MS Detection With Online Solid Phase Extraction Of Thyroid Hormones In Biological Fluids

Jason Wrigley (1), Anders Fridstrom (2), David S.Bell (3), Xiaoning Lu (4)

1) Sigma Aldrich, Poole, UK; 2) Sigma-Aldrich International GmbH, St. Gallen, Switzerland; 3) Supelco, Div. of Sigma-Aldrich, Bellefonte, PA, USA; 4) Supelco, Div. of Sigma-Aldrich, Bellefonte, PA, USA

HS01-FP10 - ***The Influence Of Mobile-Phase Composition And Column Chemistry On Retention Time In Hydrophobic Interaction Chromatography***

Martyna Baca (1), Jelle De Vos (1), Ken Cook (2), Xiaodong Liu (3), Sebastiaan Eeltink (1)

1) Vrije Universiteit Brussel, Belgium; 2) Thermo Fisher Scientific, Hemel Hempstead, UK; 3) Thermo Fisher Scientific, Sunnyvale, CA, USA

HS02 - ***Quality Control Analysis Of Glycoproteins***

Sabine Biesenbruch, Milena Quaglia, Kate Groves, Frank Torma

LGC, Teddington, UK

HS03 - ***Development Of The Chiral Separation Of L-And D- B-N-Methylamino-Alanine Using Design Of Experiments***

Audrey Combès (1), Jerome Vial (1), Valérie Pichon (1,2)

1) ESPCI-ParisTech/CNRS, France; 2) Sorbonne Universités Paris, France.

HS04 - ***Automated Open Access Lc-Hrms Development On A UPLC-QTOF System To Support NS Discovery Projects***

Alberto Fontana, Laura Iturrino, Maria Victoria Pérez

Janssen Research & Development, Toledo, Spain

HS05-FP17 - ***Determination Of The Total Drug-Related Chlorine And Bromine Contents In Human Blood Plasma Using High Performance Liquid Chromatography – Tandem ICP-Mass Spectrometry (HPLC-ICP-MS/MS)***

Balázs Klencsár (1), Eduardo Bolea-Fernandez (1), María R. Flórez (1), Lieve Balcaen (1), Filip Cuyckens (2), Frederic Lynen (3), Frank Vanhaecke (1)

1) Ghent University, Department of Analytical Chemistry, Belgium; 2) Janssen R&D, Pharmacokinetics, Belgium; 3) Ghent University, Department of Organic and Macromolecular Chemistry, Belgium

HS06 - ***Improving Sensitivity In Bioanalysis Using Trap-And-EluTE MicroLC-MS***

Remco Van Soest, Lei Xiong, Eike Loge

SCIEX, Redwood City, CA USA

HS07-FP01- ***A Novel Ion-Pairing Hydrophilic Chromatography (IP-HILIC-MS/MS) Separation: Application To Nucleosides And Nucleotide Mono-, Di- And Triphosphates***

María Mateos-Vivas, Encarnación Rodríguez-Gonzalo, Diego García-Gómez, Rita Carabias-Martínez

University of Salamanca, Spain.

HS08 - ***Optimization Of Conditions For The Analysis Of Antibody-Drug Conjugates By Comprehensive On-Line Two-Dimensional Hydrophobic Interaction Chromatography X Reversed Phase Liquid Chromatography Hyphenated To High Resolution Mass Spectrometry***

Morgan Sarrut (1), Amélie Corgier (1), Szabolcs Fekete (2), Marie-Claire Janin-Bussat (3), Alain Beck (3), Davy Guillaume (2), Sabine Heinisch (1)

1) Université de Lyon, Villeurbanne, France ; 2) University of Geneva, Switzerland ; 3) Center of Immunology Pierre Fabre, Saint-Julien-en-Genevois, France

HS09 - ***Targeted Nano Lc-Ms Quantification Of Rituximab In Human Bio-Matrix With High Resolution Accurate Mass MS***

Remco Swart, Frank Steiner, Alexander Boychenko, Martin Samonig

Thermo Fisher Scientific, Germering, Germany

HS10 - *The Use Of Capillary Electrospray Ionization (Cesi) For The Characterization Of Proteins By Native MS, The Separation Of Intact Proteins By Capillary Zone Electrophoresis And Its Use In The Analysis Of Tryptic Digests Of Biopharmaceuticals*

Stephen Lock, Jim Thorn, Ernst Bouvin
SCIEX, Warrington, United Kingdom

HS11 - *Insulin Degradation Study By Capillary Electrospray Ionization*

Stephen Lock, Jim Thorn, Ernst Bouvin
SCIEX, Warrington, United Kingdom

HS12 - *LC/MS Analysis Of Monoclonal Antibody Structure Utilizing Porous Particles : Multilevel Analysis For Proteins And Glycovariants*

Andre Dams (1), Nina Van Bockstal (2), Benjamin Libert (3), Barry E. Boyes (3)
1) Dams Analytical Consultancy, Nuenen, The Netherlands; 2) Achrom, Machelen, Belgium; 3) Advanced Materials Technologies,, Wilmington, DE, USA

HS13-FP09 - *Chromatographic Optimization Of Neuropeptide Separation: Stationary And Mobile Phase Screening*

Yannick Van Wansele, Leslie Van Den Borre, Kathleen Dewachter, Jolien Van Schoors, Ilse Smolders, Ann Van Eeckhaut
Vrije Universiteit Brussel, Belgium

HQ01 - *Optimization And Validation Of A Multi-Detector Based High Performance Liquid Chromatography Method For Phenolic Compounds Using Design Of Experiment*

Said Al-Hamimi (1), Peter Spiegel (1,2), Charlotta Turner (1)
1) Lund University, Department of Chemistry, Sweden; 2) Lund University Diabetes Centre, Malmö, Sweden

HQ02-FP20 - *A New UHPLC-MS/MS Method For The Determination Of Testosterone, Androstenedione, And 17 α -Hydroxyprogesterone In Human Plasma Using Isotopic Internal Calibration. A New Way For Endogenous Steroids Quantification?*

Stéphanie Hambÿe (1,2), David Tonoli (1,3), Fabienne Jeanneret (1,3), Serge Rudaz (1,3)
1) School of Pharmaceutical Sciences, University of Geneva and University of Lausanne, Geneva, Switzerland; 2) University of Mons, Belgium; 3) Swiss Centre for Applied Human Toxicology, Universities of Basel and Geneva, Basel, Switzerland.

HQ03-FP19 - *Quantitative Steroid Profiling In Saliva Using LC-MS/MS*

Eline Jurgens (1), Edward J. Knaven (1), Eva C.A. Hegeman (1), Marjolein W.M. van Gemert (1), Ben M. de Rooij (1), Theo H.M. Noij (1,2)
1) Avans University of Applied Science, Breda, the Netherlands; 2) WIL Research, 's-Hertogenbosch, the Netherlands

HQ04 - *High Performance Thin Layer Chromatography Mass Spectrometry Using An Elution-Based TLC-MS Interface*

Petra Lewits (1), Hans Griesinger (2), Michaela Oberle (1), Eyla Reuss (2), Michael Schulz (1)
1) Merck Darmstadt, Instrumental Analytics R&D, Germany; 2) Merck Darmstadt, Department of Bioanalytical Chemistry, Germany

HQ05 - *Application Of MicroLC-MS/MS And Silac Labeling For Identification And Quantification Of Candida Albicans Proteins Expressed In Response To Antimicrobial Photodynamic Therapy*

Katarzyna Macur (1), Aleksandra Taraszkiwicz (2), Paulina Czaplewska (1), Krzysztof P. Bielawski (2)
1) Laboratory of Mass Spectrometry and 2) Laboratory of Molecular Diagnostics, Intercollegiate Faculty of Biotechnology University of Gdańsk and Medical University of Gdańsk, Poland

HQ06 - High Retention Time Precision, Resolving Power And Mass Accuracy For Deep Label-Free Quantitative Profiling Of Human Proteome

Remco Swart (1), Frank Steiner (1), Alexander Boychenko (1), Peter Horvatovich (2), Jennifer Boughton (3), Scott Delozier (3), Karel Gerbrands (2), Frank Suits (4)
1) Thermo Fisher Scientific, Germering, Germany; 2) University of Groningen, The Netherlands; 3) Thermo Fisher Scientific, Bellefonte, PA, USA; 4) T. J. Watson Research Center, NY, USA

HQ07 - Automated Switching Between nanoLC Workflows: Sample Trapping And Direct Injection

Remco Swart, Alexander Boichenko
Thermo Fisher Scientific, Germering, Germany

HQ08 - UHPLC With Electrochemical Detection For In Vivo Monoamine Measurements – The Quest For Selectivity, Sensitivity And Throughput

Jolien Van Schoors (1), Johan Viaene (2), Yannick Van Wansele (1), Ilse Smolders (1), Bieke Dejaegher (4), Ken Broeckhoven (3), Yvan Vander Heyden (2), Ann Van Eeckhaut (1)
1) Department of Pharmaceutical Chemistry & Drug Analysis, Vrije Universiteit Brussel, Belgium; 2) Department of Analytical Chemistry and Pharmaceutical Technology, Vrije Universiteit Brussel, Belgium; 3) Department of Chemical Engineering, Vrije Universiteit Brussel, Belgium; 4) Department of Instrumental Analysis and Bioelectrochemistry, Université Libre de Bruxelles, Belgium

FA01 - Gas Chromatography - Atmospheric Pressure Chemical Ionization - Tandem Mass Spectrometry For Residue And Contaminant Analysis In Complex Matrices

Emmanuelle Bichon, Ingrid Guiffard, Kristin Hennig, Mickael Doué, Fabrice Monteau, Bruno Le Bizet
LUNAM Université, Nantes, France

FA02-FP08 - Planar Solid Phase Extraction And Flow Injection Analysis TOFMS – A New Screening Concept For Pesticide Residue Analysis

Claudia Oellig, Wolfgang Schwack
University of Hohenheim, Stuttgart, Germany

FA03 - REIMS A Rapid, Direct Technique For The Discrimination Of Meat Tissues Originating From Different Animal Species For Food Authenticity

Eric S.E. van Beelen (1), Jan Claerenboudt (2), Sara Stead (3), Simon Hird (3), Julia Balog (3), Alex Hooper (3), Steve Pringle (3), Mike Wilson (3), Mike Morris (3)
1) Waters Corporation, St. Quentin, France; 2) Waters, Zellik, Belgium; 3) Waters Corporation, Manchester, UK

FA04 - Polar Pesticide Analysis By CESI-MS

Stephen Lock, Jim Thorn, Ernst Bouvin
SCIEX, Warrington, United Kingdom

FA05 - Highly Sensitive And Selective Quantification Of Microcystin Toxins In Drinking Water By UHPLC-MS/MS

Alan P McKeown (1), Nina van Bockstal (2)
1) Advanced Chromatography Technologies, Aberdeen, Scotland, UK; 2) ACHROM, Zulte, Belgium

FA06 - SFC Analytical Method Development For Vitamin D3 And Related Compounds

Daniel Eßer (1), Nina van Bockstal (2), Junko Kawabata (3), Roland Spaegele (4), Saoko Nozawa (3), Toshikazu Adachi (3), Noritaka Kuroda (3)
 (1) YMC Europe, Dinslaken, Germany; (2) Achrom, Machelen, Belgium; (3) YMC, Kyoto, Japan; (4) DSM Nutritional Products, Sisseln, Switzerland

FA07 - *Classroom And Motivated Students: Analysis Of Alpha Acids & Iso-Alpha Acids In Beer With Ion-Pairing HPLC-UV*

Sjoerd Verbeek, Steffijn de Koning, Marieke van Deursen, Henk Haarman
 Avans University of Applied Sciences, Breda, The Netherlands

FA08 - *Online Hydrolysis And Derivatisation Of Fatty Acids*

C. Wissel, A. Lunardi, J. Vercammen
 Sample Q, Louvain-la-Neuve, Belgium

FA09 - *Fast Screening And Quantification Of Pesticide Residues In Baby Food Using GC Orbitrap MS Technology*

C. Cojocariu (1), I. De Dobbeleer (2), P. Silcock (1), J. Vercammen (3)
 1) Thermo Fisher Scientific, Runcorn, UK; 2) Thermo Fisher Scientific, Breda, The Netherlands
 3) IS-X, Louvain-la-Neuve, Belgium

FA10 - *Quantitative Analysis Of Geosmin And 2-Mib In Fish Tissue*

S. Kerkhofs (1), H. Van Den Noortgate (1), B. Lagrain (1), J. Vercammen (2), J. Martens (1)
 1) KULeuven, Belgium; 2) IS-X, Louvain-la-Neuve, Belgium

FA11 - *Selectivity Potential Of Triple Quadrupole Ms For The Analysis Of Complex Tea Infusion By Headspace SPME*

J. Weijts, J. Vercammen
 IS-X, Louvain-la-Neuve, Belgium

FA12 - *Untargeted Metabolomics Study Of The Plants-Pathogenic Fungus Magnaporthe Oryzae By GCxGCxQTOF MS*

Sofia Aronova (1), William C. Ledford (2), Margarita Marroquin-Guzman (2), Richard A. Wilson (2), Qingping Tao (3), Stephen E. Reichenbach (3), Zhanpin Wu (4), Edward B. Ledford (4), Jennifer Gushue (1), Kurt Debock (5), Harry Prest (1)
 1) Agilent Technologies, Santa Clara, CA, USA; 2) University of Nebraska at Lincoln, USA; 3) GC Image LLC, Lincoln, NE, USA; 4) Zoex Corporation, Houston, TX, USA; 5) Agilent Technologies Belgium, Diegem, Belgium

GC01 - *Hyphenating Convergence Chromatography With Mass Spectrometric Detection For The Analysis Of Cosmetic Allergens - Method Development*

Jane Cooper, Micheal Jones
 Waters Corporation, Wilmslow, UK

GC02 - *Application Of Field Flow Fractionation Hyphenated With UV, DLS And ICP-MS For The Determination Of Engineered Silver Nanoparticles In Environmental Samples Down To Trace Levels*

Florian Meier (1), Yvonne Kohl (2), Christoph Emmerling (3), Alexei Antipov (4), Peter Diehl (5), Matthias Schmidt (6), Petra Apel (7), Hagen von Briesen (2), Thorsten Klein (1)
 1) Postnova Analytics, Landsberg/Lech, Germany; 2) Fraunhofer Institute for Biomedical Engineering, Sulzbach, Germany; 3) University of Trier, Germany; 4) PlasmaChem, Berlin, Germany; 5) Rheingüttestation Worms, Worms, Germany; 6) University of Frankfurt, Germany; 7) German Federal Environmental Agency, Berlin, Germany

GC03 - *How Fast One Can Find Out What Is Active In A Complex Sample? Direct Bioautography Combined With Mass Spectrometry*

Ines Klingelhöfer, Gertrud E. Morlock
Justus Liebig University Giessen, Germany,

GC04 - *Office Chromatography: Accurate Sample Application On Miniaturized UTLC Layers, Image Evaluation And Surface Scanning By DART-MS*

Tim T. Häbe, Gertrud E. Morlock
Justus Liebig University Giessen, Germany

GC05 - *Low Level Analysis Of Phenols By GC/MSMS After On-Line Acetylation*

C. Wissel, A. Lunardi, J. Vercammen
Sample Q, Louvain-la-Neuve, Belgium

GC06 - *Determination Of C2-C12 Aldehydes In Water By Spme Arrow On-Fiber Derivatisation And GC/MS*

Peter Egli (1), Beat Schilling (1), Günter Böhm (2), Kai Schüler (2)
1) BGB Analytik, Adliswil, Switzerland; 2) CTC Analytics, Zwingen, Switzerland

CF01-FP06 - *Capillary Zone Electrophoresis To Study Gold Nanoparticles Stability As A Function Of Their Surface Chemistry*

Arnaud Pallotta, Ariane Boudier, Pierre Leroy, Igor Clarot
Université de Lorraine, Nancy, France

CF02 - *Multiplexed Detection Of Recombinant Growth Hormones In Equine Plasma By UHPLC-HRMS For Doping Control*

George H. M. Chan, Emmie N. M. Ho, Kin Sing Wong, Terence S. M. Wan
Racing Laboratory, Hong Kong Jockey Club, China

CF03 - *Development Of A LC-MS Method For The Biodistribution Studies Of Nitric Oxide Species Following Administration Of Nitric Oxide Donors Labeled With 15N Isotope*

Agnieszka Łyczkowska (1,2), Haiyan Yu (2), Igor Clarot (2), Stéphane Gibaud (2), Janina Lulek (1), Patrick Chaimbault (3), Pierre Leroy (2)
1) Poznan University of Medical Sciences, Poland ; 2) Université de Lorraine, Nancy, France; 3) Université de Lorraine, Metz, France

CF04-FP16 - *Analysis Of Phenanthrene In 1 µl Blood By Thermal Extraction GC-MS*

Beate Gruber (1), Jeroen Buters (2), Ralf Zimmermann (1,3), Georg Matuschek (4)
1) University of Rostock and the Helmholtz Zentrum München, Germany; 2) Helmholtz Zentrum München/ Technical University Munich, Germany; 3) University of Rostock, Germany; 4) Helmholtz Zentrum München, Germany

CF05 - *Setting Up Of A LC-MS/MS Assay For Identification And Quantification Of MBG In Pregnant Women For Preeclampsia Risk Evaluation*

Charline Lenaerts (1), Liz Bond (2), Robin Tuytten (2), Cedric Delporte (3), Pierre Van Antwerpen (3), Bertrand Blankert (1)
1) University of Mons, Belgium; 2) Metabolomic Diagnostics, Cork, Ireland; 3) ULB, Brussels, Belgium

CF06 - *LC-MS/MS Method Development Challenges For The Separation Of 43 Opioids And Metabolites*

Hansjörg Majer, Frances Carroll, Sharon Lupo

Restek Corporation, Bellefonte, PA, USA

CF07 - A Multi-Class Drug And Metabolite Screen Of 231 Analytes By LC-MS/MS

Hansjörg Majer, Frances Carroll, Sharon Lupo, Ty Kahler
Restek Corporation, Bellefonte, PA, USA

CF08 - The Analysis Of Common Antiepileptic Drugs In Human Urine By LC-MS/MS

Hansjörg Majer, Frances Carroll, Sharon Lupo, Ty Kahler
Restek Corporation, Bellefonte, PA, USA

CF09 - Improved Determination Of Mushroom Intoxications Using Fast Multi-Toxin HPLC-MS/MS Screening

Yasemin Numanoglu Cevik (1,2), Frederic Lynen (1)
1) Ghent University, Belgium; 2) Public Health Institution of Turkey, Sıhhiye, Ankara, Turkey

CF10-FP13 - GC×GC-TOFMS Profiling Of Decomposition Odour During The Early Post-Mortem Period For Disaster Victim Recovery

Katelynn A. Perrault (1,2), Prue Armstrong (1), Katie D. Nizio (1), Shari L. Forbes (1)
1) University of Technology Sydney, NSW, Australia; 2) University of Liège, Belgium

CF11 - Acetaldehyde: A Validated Headspace GC-MS/MS Method For Determination Of Acetaldehyde In Human Plasma

Thomas Oglesby (1), Brian Keyes (1), Khyati Shah (1), Stephanie Recklau (1), Thomas Tarnowski (2)
1) inVentiv Health Clinical Lab, Princeton, NJ, USA; 2) Gilead Sciences, Inc., Foster City, CA, USA

CF12 - Increased Laboratory Efficiency Through Automation Of ASAP Testing

T. Vercammen, A. Lunardi, J. Vercammen
Sample Q, Louvain-la-Neuve, Belgium

CF13 - Qualification Of A System For Automated SWAB Sample Testing

T. Vercammen, A. Lunardi, J. Vercammen
Sample Q, Louvain-la-Neuve, Belgium

CD01 - Statistical Approaches To Highlight Robust Biomarkers From GC×GC-(HR)TOFMS Data

N. Di Giovanni, J-F Focant
University of Liège, Belgium

CD02-FP11 - Refinement Of The Significance Level Used In Determining A Fisher Ratio Threshold For Peak Table Generation Of Complex GC×GC-TOFMS Data

Lena Dubois, Pierre-Hugues Stefanuto, Jean-François Focant
University of Liège, Belgium

CD03 - All Ion Differential Analysis In Product Control Applications Using Gc/Ms And Comprehensive GC×GC/MS

Marco Ruijken
MsMetrix, Maarssen, The Netherlands

CD04 - A High Throughput IAM-HPLC/MS Method For A Blood Brain Barrier Penetration Oriented Screening Of Drugs

Giacomo Russo (1,2), Lucia Grumetto (2), Francesco Barbato (2), Frederic Lynen (1)
1) Ghent University, Belgium; 2) Università degli Studi di Napoli Federico II, Naples, Italy

CD05 - *In Vitro And In Silico Indexes In Modelling The Blood-Brain Barrier Partitioning Of Drugs: An IAM/MLC-HPLC Study*

Giacomo Russo (1,2), Lucia Grumetto (2), Francesco Barbato (2), Frederic Lynen (1)

1) Ghent University, Belgium; 2) Università degli Studi di Napoli Federico II, Naples, Italy

CD06 - *A Novel 4D Data Mining Algorithm And Differential Analysis Software For Profiling Complex Extractable & Leachable Polymer Mixtures Using Ion Mobility Mass Spectrometry*

David A. Weil (1), Caroline S. Chu (2), Danny Van Oevelen (3)

1) Agilent Technologies, Schaumburg, IL, USA ; 2) Agilent Technologies, Santa Clara, CA, USA ; 3) Agilent Technologies Benelux, Amstelveen, The Netherlands

AC01 - *Online Gas Chromatography For Screening Of Visible Light Catalyst Films In Parallel Photo-Reactors*

Mubasher Bashir, Adam Chojecki, Alex Konig, Christian Van Dijk

Dow Benelux , Hoek, The Netherlands

AC02 - *Quantitative Analysis Of Isobutane In PE Foams*

C. Wissel, J. Verammen

IS-X, Breda, The Netherlands

AC03 - *Safe LPG Injection For Trace Sulfur And Permanent Gas Analysis*

W. Agterhuis, D. Van Oudheusden, R. Verbeek, J. Verammen

Global Analyser Solutions, Breda, The Netherlands

NP01 - *Multifunctional Tetranortriterpenoids From Neem Seeds (Azadirachta Indica A. Juss. And A. Excelsa Jack): A Challenge For The Analyst Can Be Solved By MLCCC At Both The Milligram And Multigram Scale*

Hans E. Hummel, Y. Ma, Y. Ito

1) Justus-Liebig-University Giessen, Germany/University of Illinois Urbana-Champaign, USA; 2) NIH, Bethesda, MD, USA.

NP02 - *Multivariate Optimization Of Method For Analysis Of Emissions From Heated Tobacco By HS-SPME GCxGC-TOFMS*

Radoslaw Lizak (1), Benjamin Savareear (1), Michal Brokl (2), Christopher Wright (2), Jean-François Focant (1)

1) University of Liège, Liège, Belgium; 2) British American Tobacco, Southampton, UK

NP03 - *Farming For Flavor: Impact Of Early And Late Harvest Time On Wine Aromas Of Marquette And Frontenac Cultivars Using Multidimensional Gas Chromatography - Mass Spectrometry - Olfactometry*

Somchai Rice (1,2), Nanticha Lutt (3), Jacek Koziel (1,2,4), Murli Dharmadhikari (4,5), Anne Fennell (6)

1) Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA, USA; 2) Interdepartmental Toxicology Graduate Program, Iowa State University, Ames, IA, USA; 3) University of Berkeley, Berkeley, CA, USA; 4) Department of Food Science and Human Nutrition, Iowa State University, Ames, IA, USA; 5) Midwest Grape and Wine Industry Institute, Iowa State University, Ames, IA, USA; 6) South Dakota State University, Brookings, SD, USA

NP04 - *Estimation Of The Retention Indices Of Halogenated Monoterpenes From A Plocamium Species To Facilitate Rapid Chemotaxonomic Identification Using Gas Chromatography-Mass Spectrometry (GC-MS)*

Stefan Louw (1), Lineekela Kandjengo (2), Michael Knott (3)

1) Department of Chemistry and Biochemistry, University of Namibia, Namibia; 2) Department of Fisheries and Aquatic Sciences, University of Namibia, Namibia; 3) School of Pharmacy, University of Namibia, Namibia

NP05 - Gas Chromatography-Mass Spectrometry: The Key To The Exploration Of Namibia's Sources Of Natural Products

Stefan Louw (1), Renate Hans (1), Michael Knott (2), Lineekela Kandjengo (3), Karen Nott (4), Jacobina Sheehama (1), Maureen Van Wyk (1)

1) Department of Chemistry and Biochemistry, University of Namibia, Namibia; 2) School of Pharmacy, University of Namibia, Namibia; 3) Department of Fisheries and Aquatic Sciences, University of Namibia, Namibia; 4) Integrated Rural Development and Nature Conservation, Windhoek, Namibia

NP06 - Comparison Of The Aroma Profiles Of Hops By TD-GC-TOF MS

Laura McGregor (1), Gareth Roberts (1), Massimo Santoro (1), Stefan Koschinski (2)

1) Markes International, Llantrisant, RCT, UK ; 2) Markes International, Frankfurt, Germany

NP07-FP12 - Quantitative Analysis Of Nitrogen Containing Compounds In Micro-Algae Based Bio-Oil Using GC × GC – NCD/TOF-MS

Hilal Ezgi Toraman (1), Kristina Franz (1), Neil Priharto (2), Guray Yildiz (2), Frederik Ronsse (2), Wolter Prins (2), Kevin Van Geem (1), Guy Marin (1)

1) Ghent University, Laboratory for Chemical Technology, Belgium; 2) Ghent University, Department of Biosystems Engineering, Belgium

NP08-FP15 - Investigation Of Comprehensive Two-Dimensional Gas Chromatography Coupled To Time-Of-Flight Mass Spectrometry For The Analysis Of Vapour Phase Mainstream Cigarette Smoke

Benjamin Savareear (1), Radoslaw Lizak (1), Michal Brokl (2), Chris Wright (2), Jean-François Focant (1)

1) University of Liege, Belgium; 2) British American Tobacco, Southampton, UK

NP09 - Characterization And Comparison Of Innovator And Imitation Brand Perfumes With GC, GC×GC, And HR-TOFMS

Juergen Wendt (1), Elizabeth M. Humston-Fulmer (2), Michelle Page (2), Joe Binkley (2)

1) LECO European Application and Technology Centre, Berlin, Germany; 2) LECO Corporation, Saint Joseph, MI, USA

- **POSTER FLASH PRESENTATIONS**

The following emerging young scientists were nominated to give a poster flash presentation :

Poster Flash number	Presented by (affiliation)	Book of Abstracts number
FP01	Maria Mateos-Vivas (University of Salamanca, Spain)	HS07
FP02	Abdelhakim Bounab (University of Blida, Algeria)	HT01
FP03	Ana Carolina Kogawa (Sao Paulo State University, Brazil)	HT04
FP04	Philipp Schulze (Max-Planck-Institut f. Kohlenforschung, Germany)	ED03
FP05	Ravindra Hegade (Ghent University, Belgium)	NM05
FP06	Ariane Boudier (Lorraine University, France)	CF01
FP07	Gerardus Cremers (Vito, Belgium)	NM01
FP08	Claudia Oellig (University of Hohenheim, Germany)	FA02
FP09	Annick Van Wanseele (VUB, Belgium)	HS13
FP10	Martyna Baca (VUB, Belgium)	HS01
FP11	Lena Dubois (University of Liège, Belgium)	CD02

FP12	Hilal Toraman (Ghent University, Belgium)	NP07
FP13	Katelynn Perrault (University of Liège, Belgium)	CF10
FP14	Mariarosa Maimone (University of Messina, Italy)	NM06
FP15	Benjamin Savareear (University of Liège, Belgium)	NP08
FP16	Beate Gruber (Helmholtz Zentrum München, Germany)	CF04
FP17	Balazs Klencsar (Ghent University, Belgium)	HS05
FP18	Maud Bonichon (ESPCI, France)	BS01
FP19	Eline Jurgens (Avans University of Applied Sciences, The Netherlands)	HQ03
FP20	Stephanie Hambye (University of Mons, Belgium)	HQ02