ONLINE ONLY!

Second European **SIFT-MS User Meeting**

July 14-16, 2020

8am-12pm British Summer Time **(BST)**
\ **0900-1300** Central European Summer Time **(CEST)**

Syft Technologies invites you to join the 2020 European user group meeting focused on the latest applications of selected ion flow tube mass spectrometry (SIFT-MS).

SIFT-MS users present their latest data from across diverse fields from cutting-edge breath research to antiquities studies to atmospheric research.

Meeting Chair: Vaughan Langford, PhD
Principal Scientist, Syft Technologies

FREE REGISTRATION

Register here: **bit.ly/Syft-REG-EU2020**

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TUESDAY JULY 14, 2020

ONLINE

8am—12pm | Times are shown BST

8am	Welcome and procedures **Dr Vaughan Langford** Syft Technologies, NZ
8.10am	**PLENARY I** Development of breath test for oesophageal cancer **Prof. George Hanna** Imperial College London, UK
8.50am	Development and validation of an automated SIFT-MS method for VOCs measurement in water **Dr Mark Perkins** Anatune Limited, UK
9.35am	refreshment break
9.40am	**PLENARY II** Design requirement for breath clinical studies **Prof. George Hanna** Imperial College London, UK
10.20am	SIFT-MS in heritage science: characterization of organic residues in archaeological objects by portable mass spectrometry **Prof. Ilaria Degano** University of Pisa, Italy
10.45am	refreshment break
10.55am	Finishing the 2019 story: Part 1. SIFT-MS as a sensory tool for packaging screening **Dr Vaughan Langford** Syft Technologies
11.15am	From mould worms to fake honey: using SIFT-MS to improve food quality **Prof. Sheryl Barringer** The Ohio State University, USA
11.50am	Concluding remarks **Dr Mark Perkins** Anatune Limited, UK
12pm	close for Day 1

WEDNESDAY JULY 15, 2020 | ONLINE

8am—12pm | Times are shown BST

8am	Welcome and procedures reminder **Dr Vaughan Langford** Syft Technologies, NZ
8.10am	**PLENARY III** Emerging requirements for VOC analysis in support of environmental regulation **Prof. Ally Lewis** University of York, UK
8.40am	From the shower room, to human breath to Asian megacities: A SIFT-MS measurement journey **Dr Marvin Shaw** University of York, UK
9.20am	refreshment break
9.30am	Comparison of sample introduction techniques like static headspace, dynamic headspace and direct thermal extraction for analysis of rancidity markers in instant food using SIFT-MS and GC/MS **Thomas Langenberg, Dr Eike Kleine-Benne** GERSTEL, Germany
9.55am	Comparing SIFT-MS and GC/MS in a biomedical context: A solvent and its metabolite in plasma **Dr Colin Hastie** Anatune Limited, UK
10.05am	The use of SIFT-MS for the analysis of exhaled breath from e-cigarette users after vaping **Louise Bishop** BAT, UK
10.25am	Supercritical CO_2 extraction/drying coupled with SIFT-MS analysis **Georgia Sanxaridou** CMAC/University of Strathclyde, UK
10.45am	refreshment break
11am	SIFT-MS for the characterization of the volatile organic compounds emitted from macro- and microplastics **Dr Jacopo La Nasa** University of Pisa, Italy
11.25am	Time-resolved thermal extraction of volatiles from plastic materials using TD-SIFT-MS **Dr Christopher Pfaff** Syft Technologies, Germany
11.50am	Concluding remarks **Dr Mark Perkins** Anatune Limited, UK
12pm	close for Day 2

THURSDAY JULY 16, 2020

ONLINE

8am—12pm | Times are shown BST

8am	Welcome and procedures reminder **Dr Vaughan Langford** Syft Technologies, NZ
8.05am	Multiple headspace extraction (MHE) analysis using automated SIFT-MS **Dr Mark Perkins** Anatune Limited, UK
8.30am	Use and advantages of SIFT-MS in proficiency testing and method development at a dynamic test gas facility **Christiane Kaus** IFA, Germany
8.55am	Improving SIFT-MS compound library records for OVOC Species important to the seawater interface **Ieuan Roberts** University of York, UK
9.15am	refreshment break
9.30am	SIFT-MS for soil volatile measurements **Ann-Sophie Lehnert** Max Planck Institute for Biogeochemistry, Germany
9.50am	Mobile measurements using SIFT-MS **Rebecca Wagner** University of York, UK
10.10am	Online monitoring of CO oxidation in PEM fuel cell - Combining the use of isotopic measurement and SIFT-MS negative reagent ions **Dr Thomas Bacquart** National Physical Laboratory, UK
10.30am	refreshment break
10.45am	Finishing the 2019 story: Part 2. SIFT-MS as a sensory tool for environmental applications **Dr Vaughan Langford** Syft Technologies, NZ
11.05am	LabSyft enhancements for automation and data analysis **Dr Vaughan Langford** Syft Technologies, NZ
11.30am	General discussion and feedback **Dr Vaughan Langford** Syft Technologies, NZ & **Dr Mark Perkins** Anatune Limited, UK
11.50am	Concluding remarks **Dr Vaughan Langford** Syft Technologies, NZ & **Dr Mark Perkins** Anatune Limited, UK
12pm	close of 2020 User Meeting

ABSTRACTS

TUESDAY

Prof. George Hanna
Imperial College London, UK

Development of Breath Test for Oesophageal Cancer

To be advised

Dr Mark Perkins
Anatune Limited, UK

Development and Validation of an Automated SIFT-MS Method for VOC Measurements in Water

Automated SIFT-MS enables high-throughput analytical methods to be developed quickly and easily for a wide range of analytes, measured simultaneously, using static headspace analysis. This presentation demonstrates the development and validation of a method for the determination of a range of chlorinated and aromatic hydrocarbon compounds in water. By following the methodology detailed in the ICH 2Q guidelines on method validation, originally developed for GC/MS analysis, we show that these can be equally applied to automated SIFT-MS methods.

Prof. George Hanna
Imperial College London, UK

Design Requirement for Breath Clinical Studies

To be advised

Prof. Ilaria Degano, Dr Jacopo La Nasa, Prof. Maria Perla Colombini, Prof. Francesca Modugno, Prof. Erika Ribechini
Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

SIFT-MS in Heritage Science: Characterization of Organic Residues in Archaeological Objects by Portable Mass Spectrometry

The identification at molecular level of organic materials in heritage objects as paintings or archaeological amorphous residues requires in most cases the collection of micro-samples followed by micro-destructive analysis. In this study, we assess the possibility to characterize natural organic materials by mean of non-invasive analysis of released volatile organic compounds (VOCs) through selected ion flow tube-mass spectrometry (SIFT-MS).

We tested the portable instrumentation on different reference materials: natural plant oils, waxes and resins, and synthetic varnishes, to evaluate the possibility to obtain qualitative data for the identification of these materials in heritage objects avoiding any sampling. This new analytical approach was validated by comparison with the traditional approach for VOCs analysis based on SPME-GC/MS analysis. The advantages in the use of this instrumentation, such as the low limits of detection, the high selectivity, and the possibility to perform in situ analysis, could be extremely relevant within cultural heritage where the characterization of organic materials requires novel analytical approaches not needing invasive protocols.

The approach was first applied both in laboratory by analysing samples collected from archaeological objects, and then in-museum. In particular, the chemical composition of organic materials in the grave goods from the burial assemblage of Kha and Merit preserved at the

Museo Egizio in Turin has been non-invasively and non-destructively investigated through the analysis of emitted organic volatile compounds by in-museum ion flow mass spectrometry (SIFT-MS). This unprecedented approach allows us to achieve real-time headspace mass spectra of organic materials contained in more than 40 vessels and jars. The interpretation of soft chemical-ionization mass spectra allowed the identification of biomarkers pointing to specific classes of materials in the vessels. Series of objects were also grouped or compared according to similarities in their VOC profiles, by applying multivariate statistical data analysis. The obtained chemical information offers the unique possibility to confirm and deepen archaeological researches on the use and purpose of vessels complementing it with material analysis.

Dr Vaughan Langford

Syft Technologies, NZ

Finishing the 2019 Story: Part 1. SIFT-MS as a Sensory Tool for Packaging Screening

Can SIFT-MS mimic the response of the human nose and provide "instrumental sensory analysis"? This study was presented in very preliminary from at last year's user meeting, but data work-up and preparations for publication have yielded a more complete case study with relevance to packaging and flavor applications.

This study investigated chemical and sensory-like analysis with SIFT-MS in the context of odors from paperboard packaging. The results of the paperboard case study answer these questions:

- Can SIFT-MS discriminate paper types?
- Can SIFT-MS identify the mill that the paper comes from?
- Can SIFT-MS predict the odor rating given by the sensory panel?
- Can SIFT-MS predict the odor note/descriptor/character?

SIFT-MS looks to be a very promising tool for rapid instrument-based sensory screening.

Prof. Sheryl Barringer

The Ohio State University, Columbus OH, USA

From Mould Worms to Fake Honey: Using SIFT-MS to Improve Food Quality

SIFT-MS's ability to measure volatiles can be used in a number of different ways, including understanding consumer acceptance of food, determining causes of spoilage, detecting adulteration and identifying the original source of a food item. Using examples from studies on fruit juice, cheese, honey and garlic, we will discuss these applications.

WEDNESDAY

Prof. Ally Lewis

University of York, UK

Emerging Requirements for VOC Analysis in Support of Environmental Regulation

Volatile organic compounds have been regulated for more than four decades by international treaties such as the Gothenburg protocol and various EC Directives. Emissions have reduced significantly since a peak in around 1990 when road transport was by far the largest source, from evaporation losses and the tailpipe. Over the last decade emissions in Europe and the US have plateaued, and are now predominately from solvents, used in industry and the home. This change, away from gasoline to solvents, has altered the mixture of VOCs that are present air and creates new measurement challenges. International targets set for VOC emissions in 2030 will require further reductions in most high-income countries, and this could include increased focus on reducing the solvent content of everyday products. The next few years will bring greater regulatory focus on VOC emissions

from sectors that have previously seen only light touch controls on activities, and this is likely to increase demand for quantitative analytical methods.

Dr Marvin Shaw

University of York, UK

From the Shower Room, to Human Breath to Asian Megacities: A SIFT-MS Measurement Journey

Volatile organic compounds (VOCs) are emitted from a complex variety of anthropogenic and natural sources to the earth's atmosphere. There is growing evidence that both aerosol and non-aerosol consumer products, including personal care products (PCPs) and household cleaning products (HCPs), contribute an increasing proportion to anthropogenic VOC emissions, as historical sources of VOCs such as road transport continue to decline. An increasing fraction of VOC emissions come from the domestic use of solvents, which are contained within myriad commonplace consumer products, however emissions rates are often poorly characterised and depend significantly on individual behaviour. An ability to selectively quantify VOC real-time concentrations and emissions in both ambient and indoor air is of importance to understand and characterise the sources and sinks for individual VOCs.

In this presentation, we demonstrate the versatility of the use of SIFT-MS in a range of measurement environments:

1. The development, optimisation and evaluation of an experimental autonomous air quality monitoring system based upon the Voice200*ultra* selected ion flow tube mass spectrometer (SIFT-MS), and subsequent VOC compound mixing ratio and Eddy Co-variance flux determination during its deployment in an Asian Mega city.
2. The evaluation of VOC emissions from household PCPs during showering.
3. The development of breath sampling metrology for the rapid, accurate determination of breath VOC concentrations.

Thomas Langenberg, Dr Eike Kleine-Benne

GERSTEL GmbH& Co. KG, Mulheim an der Ruhr, Germany

Comparison of Sample Introduction Techniques Like Static Headspace, Dynamic Headspace and Direct Thermal Extraction for Analysis of Rancidity Markers in Instant Food Using SIFT-MS and GC/MS

Rancidly smelling compounds in fatty food, usually aldehydes, are formed in auto-oxidation processes when the food is ageing in the presence of oxygen. Especially oxidation of unsaturated fatty acids form such aldehydes that can be analysed as rancidity markers. SIFT-MS promises to be a sensitive and fast technique for their analysis, ideally combined with a simple sample preparation and introduction technique. Headspace sample introduction techniques like static headspace, dynamic headspace and direct thermal desorption fulfil this criteria. For this work we coupled a thermal desorption device to a SIFT-MS. A Multi Purpose Sampler equipped with a headspace syringe in combination with the thermal desorption system enabled all three sample introduction techniques. A salt/oil mixture spiked with 8 off-flavour compounds represents a model instant food that was used for a technique comparison. LODs in the low ng/g range were achieved for all analytes. Especially the dynamic headspace approach showed appropriate analytical performance. A combination with GC/MS was used to ensure results for analytical performance.

Dr Colin Hastie
Anatune Limited, UK

Comparing SIFT-MS and GC/MS in a Biomedical Context: A Solvent and its Metabolite in Plasma

Self-poisoning with professional agricultural pesticide products is responsible for about 20% of global suicide. Toxicity can come from the pesticide or the cosolvent carrier. Treatment of severe poisoning involves long-term intensive clinical care and is often unsuccessful. However, faster detection could aid earlier identification of pesticide poisoning thus allowing faster intervention, reducing mortality. Traditionally this analysis is done by Headspace GC/MS of plasma samples, here we compare analysis by both automated headspace GC/MS and SIFT-MS. The results obtained showed good correlations between techniques, with similar sensitivity, accuracy and precision.

Louise Bishop
BAT, UK

The Use of SIFT-MS for the Analysis of Exhaled Breath from E-cigarette Users After Vaping

The consumption of cigarettes is decreasing and the use of Potentially Reduced Risk Products (PRRP) is increasing with the use of e-cigarettes being the most popular of the nicotine PRRPs. As the aerosol from these products is very different from that from tobacco smoke, a sensitive method to chemical profile exhaled breath from users of PRRP products, such as e-cigarettes, is important in the area of consumer exposure assessment.

The current method used in BAT, developed for cigarette use but applicable to e-cigarettes, collects the exhalate from 10 breaths from subjects onto a Cambridge Filter Pad, which is subsequently extracted with solvent and then analysed by a gas chromatograph with flame ionisation detection. This approach achieves sensitivity for the main constituents of the e-liquid but nicotine and flavours are at too low a concentration in the exhaled breath to be measured in this way.

SIFT-MS coupled with the breath head sampling inlet accessory has been used to analyse the exhaled breath of 10 subjects. The data is produced in real time, no sample pre-treatment and on a puff by puff basis providing more detailed information of the exhalate. Results from the study will be presented to evaluate exhaled menthol, nicotine and other constituents. The results will demonstrate the capability and also highlight some of the limitations of the SIFT-MS using the breath head as supplied

Georgia Sanxaridou[1], Dr Mark Perkins[2], Dr John Robertson[1], Dr Chris Price[1]
[1] EPSRC Centre for Innovative Manufacturing in Continuous Manufacturing and Crystallisation, University of Strathclyde and Department of Chemical and Process Engineering, University of Strathclyde, Glasgow, UK

[2] Anatune Limited, UK

Supercritical CO_2 Extraction/Drying Coupled with Selected Ion Flow Tube Mass Spectrometry (SIFT-MS) Analysis

Supercritical CO_2 extraction is used as an alternative way of drying a drug product after being washed with an organic solvent. To determine a satisfactory drying endpoint, Selected Ion Flow Tube Mass Spectrometry (SIFT-MS) is coupled with the extraction/drying process. SIFT-MS is a sensitive analysis technique (100 ppm to parts per billion) that has the capability to track concentration changes of volatile organic compounds in real-time. By using online probe sampling at the later stages of the extraction/drying, the endpoint of the process can be monitored, allowing for the final solvent concentrations in the product to be minimised.

Dr Jacopo La Nasa, Dr Enrico Manco, Dr Tommaso Lomonaco, Dr Alessio Ceccarini, Dr Andrea Corti, Dr Roger Fuoco, Dt Valter Castelvetro, Prof. Francesca Modugno, Prof. Ilaria Degano

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

Selected Ion Flow Tube-Mass Spectrometry for the Characterization of the Volatile Organic Compounds Emitted from Macro- and Microplastics

In the last years the environmental pollution from microplastics has become one of the most relevant and studied topics in environmental chemistry. At present, most of the studies on this type of pollution have been performed by spectroscopic or thermal analysis methods to assess their presence in different matrices. However, recent studies proved that microplastics can also be considered as a direct source of harmful volatile organic compounds (VOCs).

In this work, we tested for the first time the use of portable selected ion flow tube-mass spectrometry for the characterization of VOCs emitted from a set of reference plastic debris subjected to artificial ageing and to environmental samples of plastic debris from a dune beach in Northern Tuscany.

Interpretation of the individual SIFT-MS spectra, aided by principal component data analysis of the data, allowed us to classify the polymeric materials constituting the MPs in function of their VOCs profiles, oxidation degree, and sampling position, proving the potentiality of the analytical approach.

This study opens the possibility of in-situ using a portable mass spectrometer to obtain real-time information on the molecular composition on the VOCs emitted from microplastics, which would be a significant step forward in studying this source of environmental pollution.

Dr Christopher Pfaff, Dr Kalib J.M. Bell, Dr Jing Ma

Syft Technologies, Europe and New Zealand

Time-Resolved Thermal Extraction of Volatiles from Plastic Materials using TD-SIFT-MS

In recent years, the drive towards safer and more environmentally friendly products has increased the challenges faced in raw material processing for manufacturers in the automotive, packaging, medical device and consumer products industries. SIFT-MS has been shown to be a fast, yet reliable technique for measurement of volatiles from materials during processing or in finished products. This capability has now been further expanded through the most recent collaborative effort from Syft Technologies and GERSTEL, with the development of automated thermal desorption (TD)-SIFT-MS. This revolutionary solution provides sample throughputs at least three-fold higher than conventional TD-gas chromatography methods. Furthermore, the continuous, direct analysis provided by SIFT-MS means that volatiles are measured as they are desorbed, allowing for the acquisition of additional information that is unavailable to other thermal extraction techniques. This enables materials manufacturers to optimize processes and products through increased understanding of the time- and temperature-resolved emission behaviour of their materials.

For example, it is widely known that polyoxymethylene (POM) releases formaldehyde. However, while raw materials analysis using chromatography would have provided information on total emissions, it misses important information relating real-time formaldehyde release to recommended POM moulding and operating temperatures (Figure 1). In this presentation, examples of real-time thermal extraction and analysis of different plastic materials using TD-SIFT-MS will be shown, and its application to product

development and processing environments will be discussed.

THURSDAY

Dr Mark Perkins

Anatune Limited, UK

Multiple Headspace Extraction (MHE) Analysis Using Automated SIFT-MS

Multiple headspace extraction (MHE) analysis allows the total content of VOCs present in a solid sample to be calculated by using repeat headspace measurements of the sample. Using traditional analytical methods, such as GC/MS, this can be a relatively long and involved analysis. The ability the rapidly analyse headspace samples using automated SIFT-MS significantly reduces the analysis time per sample. In this presentation we demonstrate this on a range of sample types.

Christiane Kaus

IFA - Institute for Occupational Safety and Health of the German Social Accident Insurance, 53757 Sankt Augustin, Germany

Use and Advantages of SIFT-MS in Proficiency Testing and Method Development at a Dynamic Test Gas Facility

Quantification of harmful substances in workplace environments is a topic of huge interest. For quality assurance purposes, the IFA provides proficiency testing schemes for various hazardous substances (VOCs, aldehydes and inorganic acids) at its dynamic test gas facility. Due to continuous improvement, new online analytical methods have been established. By using SIFT-MS, the quantitative real-time analysis of all currently used substances in IFAs test gas facility is possible. Furthermore, SIFT-MS is successfully applied in the development of a new dosing system. Results of the validation process and comparison to other offline- and online-methods will be presented.

Ieuan Roberts, Dr Marvin Shaw, Prof. Lucy Carpenter

University of York, UK

Improving SIFT-MS Compound Library Records for OVOC Species Important to the Seawater Interface

Ozone deposition to the ocean surface is mediated via two main reaction pathways, the reaction with iodide and the reaction with dissolved organic matter (DOM). Understanding these processes is of great importance to the future impact of tropospheric ozone on climate forcing and coastal human health.

SIFT-MS is a useful technique that allows real-time measurement of seawater ozonolysis runs to determine the products of these interactions, an important step into determining the mechanisms of these interactions. The only downside is the need for adequate rate data for the expected products of these reactions, often compounds that have not been measured before on the SIFT.

The LabSyft compound library (Syft Technologies) has an extensive database but utilises historic rate constant and product ion branching ratio data to calculate compound concentrations. The majority of this data is from previous SIFT-MS instruments that lacked a heated flow tube and hence, potentially, have different ion chemistries than may be observed on the Voice 200ultra SIFT-MS. All of this necessitated the construction of a permeation system capable of delivering known concentration of compounds to the SIFT for rate constants and product ion behaviour to be determined experimentally.

This presentation will demonstrate the development of this system, the results so far and its comparison to data already in the library.

Ann-Sophie Lehnert

Max Planck Institute for Biogeochemistry, Jena, Germany

SIFT-MS for Soil Volatile Measurements

In soils, volatiles play an important role for chemical communication within one species and between different species, as gases can diffuse and thus spread the message quickly. In addition, volatiles like acetic acid or pyruvic acid, hydrogen sulfide and dimethyl sulfide function as both metabolic intermediates and end products, so the metabolic activity of different microbial groups can be tracked in situ via their volatile emissions. However, soil emission rates are typically very low, leading to mixing ratios of ppb or even lower in dynamic soil chambers. Hence, a very sensitive and fast technique is needed for measuring these gases.

Here we present the optimization of our Syft Voice200*ultra* SIFT-MS instrument to measure the emission and consumption of volatiles in soil incubations. By selecting a high sample gas flow and then optimizing flow tube voltage and temperature as well as carrier gas flow, we could improve the instrument sensitivity by a factor of 10 compared to the standard settings provided by Syft. A comparison with an Ionicon PTR-QMS 500 showed that the PTR-MS is still more sensitive by a factor of 10, but SIFT-MS is less humidity-dependent and provides more structural information. We thus decided to use the SIFT-MS for soil incubation measurements. To measure volatiles released from soils, we compared the concentration of gases in an airstream entering and exiting a chamber (300 mL/min) containing 100 g of soil sample. 100 mL/min of this gas flow was measured with the SIFT-MS, at 150 mL/min helium carrier gas flow, 50 V flow tube voltage and 120 °C flow tube temperature.

We report results from a study that explored changes in microbial metabolism with oxygen limitation. To do this, we submerged fen soil sampled from a location that was well aerated by summer drought and incubated it under Argon for four weeks, sampling and measuring five replicates every week. Our results show the expected transition from aerobic respiration to nitrate reduction, sulphate reduction, and finally methanogenesis, seen by emission of gases that signal key shifts in metabolism (e.g., N_2O for nitrate reduction, DMS for sulphate reduction and methane). As next steps, we want to investigate how exactly redox potential variations in soil might influence gas emissions to be able to trace back the conditions of microsites in soil by the bulk parameter of VOC emissions.

Rebecca Wagner, Dr Marvin Shaw

University of York, UK

Mobile Measurements Using SIFT-MS

Air pollution is a major concern due to the environmental and health effects that it can cause. Therefore, it is important that air pollution in urban areas is fully understood and that the emissions of pollutants is quantified. At the University of York, a SIFT-MS instrument has been placed inside a mobile laboratory in order to measure the emission of atmospheric gases that contribute to air pollution. We chose to take measurements from a route around York and we have discovered that York is a very complex city dominated by a number of different emissions sources. These include emissions from vehicles, industrial areas, petrol stations, garages, nail salons, hairdressers and dry cleaners and we are taking measurements of a variety of species. The aim of this work is to see if it is possible to separate these sources apart and if they contribute equally or if the pollution in York is totally dominated by vehicle emissions, as is common in many urban areas.

Also part of this work is to focus on vehicle emissions as they can significantly contribute to poor air quality. The SIFT-MS instrument will be used to quantify vehicle emission factors of unregulated pollutants such as aldehydes, ammonia, nitrous acid and various hydrocarbons. This will be done by plume chasing vehicle for a period of time and also sampling from vehicle exhausts from the side of the road.

Dr Thomas Bacquart

National Physical Laboratory, Teddington, UK

Online Monitoring of CO Oxidation in PEM Fuel Cell - Combining the Use of Isotopic Measurement and SIFT-MS Negative Reagent Ions

The PEM fuel cell is the key component of the fuel cell electric vehicle. The hydrogen feeding the fuel cell may contain contaminants as CO. The behaviour of CO in PEM Fuel cell is extremely important to determine improve lifetime and durability of fuel cell. However, it has been impossible to monitor real-time oxidation of CO into CO_2 onto the PEM fuel cell surface due to technical complexity. NPL developed an approach using ^{13}CO contaminated hydrogen to monitor real-time $^{13}CO_2$ and $^{12}CO_2$ by SIFT-MS negative ions reagent. The presentation will highlight the NPL setup in place, the calibration of the measurement in humidified atmosphere and the perspective of this first isotopic measurements for fuel cells research.

Dr Vaughan Langford

Syft Technologies, NZ

Finishing the 2019 Story: Part 2. SIFT-MS as a Sensory Tool for Environmental Applications

Can SIFT-MS mimic the response of the human nose and provide "instrumental sensory analysis"? This study was presented in very preliminary from at last year's user meeting, but data work-up and preparations for publication have yielded a more complete case study with relevance to environmental applications.

This presentation will address chemical and sensory-like analysis that uses SIFT-MS in the context of a well-known source of objectionable odours: wastewater treatment. The case study will critique both instrumental and sensory methods.