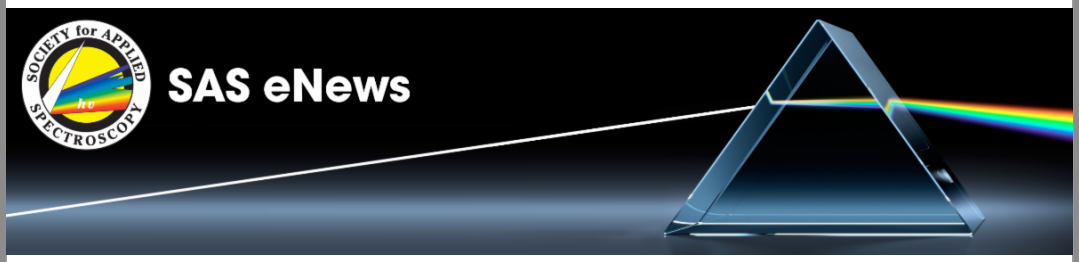
June 2021



Editor's Note: The Optimism of SciX 2021

As I wrap up this current draft of the June 2021 SAS Newsletter, I want to take a moment to pause and reflect upon the changes the spectroscopy community have weathered over the last 15 months. From lockdowns and shutdown laboratories to mask mandates, from eagerly awaiting a vaccine to the launch of four vaccines, from death rates moving downward to states and businesses reopening and promises of normalcy this fall and winter, this has been a lot to take in for many of us in such a short timescale. Not to mention the losses of jobs, deaths of friends and relatives, and other life challenges (virtual schooling anyone?!) have been substantial for many of our readership. We give this swarm of changes their due acknowledgment and not sweep the long-lasting affects of these items under a rug.

My hope is, with the diligent work towards an in-person SciX in Providence, Rhode Island, many of us have something to look forward to in the coming months. SciX 2021 will be the reminder of life pre-COVID and reengaging with our peers in person rather than the 500th Zoom call; it means taking time to enjoy a cup of coffee in between oral sessions and of course honoring those within the spectroscopy community. I, for one, will be gleefully happy to rejoin the SAS community at SciX 2021, this time in a new job role, back in the domain of spectroscopy, an area near and dear to my heart. I encourage our SAS community, and the spectroscopy community to find optimism in the promise of SciX 2021!

Luisa Profeta
SAS Newsletter Editor

Wiley Seminar Series

First Webinar: *Portable Spectroscopy Within Forensics, Law Enforcement, Safety and Security*

This webinar was the first in a mini-series starting 3 June 2021, hosted in cooperation with the Coblentz Society, the Society for Applied Spectroscopy, and Wiley Analytical Science. The content is based on the chapters in the book, *Portable Spectroscopy and Spectrometry*, edited by Richard Crocombe, Pauline Leary, and Brooke Kammrath. There are two more webinars planned in late June and late July, with possibly more to come in September. The details will be published in subsequent newsletters.

The first webinar included:

Crime Scene Spectroscopy and Spectrometry, Brooke Kammrath

Use of Portable Spectrometers in Safety and Security Applications, Pauline Leary

Handheld Raman, SERS, SORS, and their Applications, Mike Hargreaves

The webinars are free to attend, but you must pre-register.

For additional information about the webinar, click here.

New Jersey/New York SAS Monthly Speaker 24 June 2021

The New York/New Jersey section of SAS cordially invites all interested spectroscopists to join them virtually for a talk by the renowned Professor Karen Faulds. For more information, please contact John Wasylyk (john.wasylyk@bms.com).

To join the meeting, starting at 12.00pm EDT from the University of Strathclyde, click here.

Or call in (audio only)
+1 908-409-1059,158818886# United States, Elizabeth
(833) 733-5876,158818886# United States (Toll-free)
Phone Conference ID: 158 818 886#

The topic of discussion will be:

Multiplexed and Sensitive Bioanalysis Using SERS and SESORS

Karen Faulds[1]*, S. Mabbott1, H. Kearns[1], L.E. Jamieson[1], F. Nicolson[1], A. Kapara[1], D. Graham[1], R. Goodacre[2]

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[2] School of Chemistry and Manchester Interdisciplinary Biocentre, University of Manchester, 131 Princes Street, Manchester, M1 7ND, UK Abstract

Abstract

Surface enhanced Raman scattering (SERS) is an analytical technique with several advantages over competitive techniques in terms of improved sensitivity and multiplexing. We have made great progress in the development of SERS as a quantitative analytical method, in particular for the detection of DNA. However, the lack of quantitative data relating to real examples has prevented more widespread adoption of the technique. Detection of specific DNA sequences is central to modern molecular biology and also to molecular diagnostics where identification of a particular disease is based on nucleic acid identification. Many methods exist and fluorescence spectroscopy dominates the detection technologies employed with different assay formats. Another advantage of SERS over existing detection techniques is that of the ability to multiplex which is limited when using techniques such as fluorescence. We have clearly demonstrated the ability to identify and quantify the presence of a mixture of three pathogenic DNA sequences in solution using data analysis techniques.

Here we demonstrate the development of new bioanalytical assays based upon SERS which have been used successfully for the detection of bacterial pathogens using modified SERS active probes. Biomolecule functionalized nanoparticles have been designed to give a specific SERS response resulting in discernible differences in the SERS which can be correlated to the presence of specific pathogens. In this presentation the simultaneous detection and quantitation of three pathogens within a multiplex sample will be demonstrated. We have also recently published the use of nanoparticles functionalized with resonant Raman reporter molecule for the visualization of a 3D breast cancer tumor models using Spatially Offset Raman combined with SERRS (SESORRS).

Biography

Karen Faulds is a Professor in the Department of Pure and Applied Chemistry at the University of Strathclyde and an expert in the development of surface enhanced Raman scattering (SERS) and Raman techniques for novel analytical detection strategies and in particular multiplexed bioanalytical applications. She has published over 145 peer reviewed publications and has filed five patents. She has been awarded over £20M in funding as principal and co-investigator from EPSRC, BBSRC, charities, industry, and governmental bodies. Her Groups research has been recognised through multiple awards including the Nexxus Young Life Scientist of the Year Award (2009), Royal Society of Chemistry (RSC) Joseph Black Award (2013), Craver Award (2016) and Charles Mann Award (2019). She is a Fellow of the Royal Society of Chemistry (2012), the Society for Applied Spectroscopy (2017), and the Royal Society of Edinburgh (2018). She has been named as one of the Top 50 Women in Analytical Science (2016), Top 10 Spectroscopists (2017), and Top 100 Influential Analytical Scientists (2019) by *The Analytical Scientist*. She has given over 90 invited talks at national and international conferences.

She was elected as the first female and youngest Chair of the Infrared and Raman Discussion Group (IRDG) in 2014 which is the oldest spectroscopic discussion society in the UK. She is an appointed member of the Royal Society of Chemistry (RSC) Chemical Biology Interface Division Council and a member of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Governing Board and a member of the International Steering Committee of the International Conference on Raman Spectroscopy (ICORS). She is the Strathclyde Director of the EPSRC and MRC Centre for Doctoral Training in Optical Medical Imaging joint between the Universities of Edinburgh and Strathclyde, serves on the editorial boards of *RSC Advances* and *Analyst* and the editorial advisory board for *Chemical Society Reviews* and *Analytical Chemistry*.

Do you have something spectroscopy-related you want to discuss in the newsletter? Or something that will help our membership such as career tips or application tips? Please let us know by emailing luisaprofeta@gmail.com.