

SAS SPECTRUM eNEWS

May 2016 Special Issue: Portable and Handheld Spectrometry

Miniaturizing spectrometers is a current trend that is rapidly transforming the way spectroscopy is practiced. This special issue of *Applied Spectroscopy* contains 22 peer-reviewed papers across a wide range of analytical techniques. Members can access journal content: <http://asp.sagepub.com/content/current>. Guest Editors: Richard Crocombe and Mark Druy.

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Contributed by Frederick G. Haibach

SAS and FACSS Exhibit at 2016 USA Science and Engineering Festival in Washington, D.C.

The SAS and the FACSS member societies recently supported a science outreach exhibit at the fourth USA Science and Engineering Festival (USA SEF), held April 15-17 in the Walter Washington convention center in Downtown Washington, D.C. The free three-day festival is the largest STEM education event of its kind—approximately 350,000 kids, educators, professionals, parents, and curious bystanders were estimated to have visited over 3000 booth exhibits. Large crowds, lots of activity, and a lot of noise evidenced a very lively event! The booth was the first visit by FACSS to the USA SEF, and it was made possible through a generous STEM-support grant from the Kerith Foundation. In keeping with our analytical chemistry roots, the booth assembled by FACSS was entitled "FACSS presents: Experiments in Spectroscopy". The theme of the exhibits centered on spectroscopic measurements, and it featured several educational exhibits that were designed for all ages and levels of participation. The big hit this year was an IR-imaging camera that allowed younger kids to see their IR image in a real-time video format. This proved a great way to watch kids break into spontaneous dance, stick out their tongues, make faces, and it promoted copious amounts of laughter and also engaged and encouraged the attendees to think about light and introduce spectroscopy.



Jim Ryzdak acts as a model for the IR camera.

This basic activity led the more curious on to subsequent exhibits in the booth. SAS and Coblenz Society member Jim Ryzdak introduced the concept of IR spectroscopy with his "IR fingerprint" experiment. Here, children would place their finger on the window of a portable ATR FT-IR spectrophotometer (see attached picture) and receive a printout of the IR absorption spectrum of their finger, complete with possible compound assignments. Children, and their parents, were fascinated to learn about this type of spectroscopy. Use of this instrumentation, which is normally not accessible to the public, was made possible through the generous loan of a portable FT-IR spectrophotometer by Agilent Technologies.

On the opposite side of the booth, the curious were invited to learn about Raman spectroscopy. Through the generous support of both Bristol-Myers Squibb and B&W Tech, there were two portable Raman spectrometers in the booth. Volunteers Anna Luczak and Thomas Padlo introduced the attendees to Raman scattering (which many had never heard of before—"like the noodle?!") and demonstrated the instrumentation live and in-person (see attached picture). Attendees were particularly amazed by the ability of the handheld Raman instruments to identify pure substances (such as plastics) or mixtures of materials. It was truly CSI-like!

Lastly, FACSS and the Kerith Foundation made a special effort to support STEM educators at the event. Former SAS president Mary Kate Donais and current FACSS governing board chairman Steven Ray assembled and distributed over 60 UV-Vis 'educator kits' containing a simple UV-Vis absorption experiment conceived and constructed by SAS member Alex Scheeline and his company, SpectroClick. The SpectroClick kit contains an LED source, cuvette, a diffraction grating, and a calibrated cardboard assembly, which allowed students and teachers to assemble their own spectrophotometer. The simple construction allows students to see the effects of optical absorption in sections of the visible spectrum by naked eye (or cell phone camera) in the first, second, and third diffraction orders. This system was perhaps most appreciated by parents that are home-schooling their children, since it affords them the tools to do in-house demonstrations using simple components. All of the volunteers in the booth are anxious to learn if the system catches on with these under-represented STEM-educators!

The USA SEF event was an exhilarating and exhausting weekend. The SAS and FACSS recognize the volunteers that took the time to work in the booth: Mary-Kate Donais, Jill Harland, Anna Luczak, Michaela Raglione, Steve Ray, Jim Ryzdak, Thomas Padlo, and John Wasyluk. Without their help and input, these types of activities could not happen. In the end, all the volunteers agreed: the FACSS societies should return for the 5th USA SEF! Look out for our next call for volunteers!

Contributed by Steven Ray and Mary-Kate Donais



SAS Member Professor Glen Jackson and family have their IR fingerprints taken.



Mary Kate Donais and Jim Ryzdak explain the tenets of spectroscopy.