

## R. Graham Cooks Elected to the National Academy of Sciences

Congratulations to Graham Cooks, a long-time member of the ASMS and a former president of the society, who was recently elected to the National Academy of Sciences of the USA. He joins other eminent American mass spectrometrists including John Fenn, Fred McLafferty, Klaus Biemann, Carl Djerassi, and Jack Beauchamp. There are 2000 members in many field of science, and approximately 80 new members are elected each April.

I have known Graham, or about him, for 47 years. It was in 1968 as a postdoctoral research associate with Fred McLafferty at Purdue that Fred was helping me locate an academic position. Since I am a Midwesterner, we were restricting considerations to the Midwest. Fred indicated that he knew of a position at Kansas State University, but then he backed away and reported that Kansas State was about to appoint a “star” who had recently finished his PhD studies at Cambridge in England. This was my first introduction to the name R. Graham Cooks, and “star quality” was and still is correct. I did not apply at KSU and some months later accepted my first independent position at the neighboring University of Nebraska-Lincoln.

Later, I met Graham, maybe via a seminar invitation or at a Midwest meeting, before he went to Purdue. I am quite sure he reviewed some of my early papers, where he was helpful, but more importantly enthusiastic and supportive, as is typical of his personality. A few papers in *J. Am. Chem. Soc.* in those days was sufficient for tenure.

In 1976, I organized a conference called “High Performance Mass Spectrometry” and followed it with a book published by ACS. Graham came to help us celebrate the addition of a new-generation, high-performance mass spectrometer (a Kratos MS-50). By then, he was faculty at Purdue and his interests had evolved to use chemical ionization to prepare interesting ions that preserve the structure of their neutral precursors and then to interrogate their structure by collisional activation in a kinetic energy spectrometer (an instrument that was an early example of MS/MS). His thinking, 40 years ago, is still current and insightful.

At that time, the approach we now know as MS/MS did not exist although a number of us were studying metastable ions and even collisionally activating gas-phase ions. I recall a National ACS Meeting in 1979 during which Graham invited a number of early workers in tandem mass spectrometry including Chris Enke, Rick Yost, Dave Russell, and me to discuss what we should call this new area. From the meeting came the term MS/MS. Approximately the same time, we hosted another symposium on high-performance MS in



Graham Cooks, ca. 2000, enjoying a *JASMS* Editorial Board Meeting and dinner.

Lincoln, and Graham was now talking about his earliest results with the kinetic method.

Ideas flowed from his active mind and have continued from his early approaches using MS/MS, collisional, and surface activation to understand ion structure. More importantly, Graham put his own touch on this area by conducting complex mixture analysis by MS/MS. Everyone from that era recalls his direct MS/MS analysis of coca leaves and strawberry jam, admiring his boldness to eschew chromatography and advocate putting such complex samples in pristine mass spectrometers.

Graham has impacted nearly all aspects of our subject. His kinetic method yields physical chemical properties (e.g., proton affinities) of complex molecules, taking as subjects molecules well beyond the ken of the chemical physicists of the day who remained fascinated by detailed measurements of simple hydrocarbons. His invention of DESI has become an important complement to electrospray ionization and an opportunity to do “ambient mass spectrometry.” And then, there are “paper spray” and “leaf spray.” Once he formed ions by various approaches, some his own, he contributed considerably to our

understanding of collisional activation and developed surface-induced dissociation. He promoted extensively ion traps and orbitraps for mass analysis, recognizing more quickly than most the importance of these instruments compared to the large magnetic sectors and Fourier transform ICR instruments that captured my imagination, for example. This interest has continued with the development of miniature mass spectrometers, even those that can fit in a back pack or a surgical operating theater.

Graham sees opportunities to use mass spectrometers in many settings, for example, to do organic synthesis and even teach organic synthesis with no hoods or solvent disposal. Preparing interesting materials prompted his development of soft landing ideas and related strategies of synthesis. A summary of his work is captured with some references by: [http://en.wikipedia.org/wiki/R.\\_Graham\\_Cooks](http://en.wikipedia.org/wiki/R._Graham_Cooks).

Graham has always resented the attitude of some chemists towards chemical analysis and mass spectrometry, regarding these areas as mere techniques with little intellectual content. In the minds of some, especially those who do disease-related

research, mass spectrometry is not hypothesis-driven. Graham's work is clearly an example to the contrary, and his election to the National Academy vindicates him and all of us and will help eliminate the attitude of others to our subject.

As *JASMS* editor, I appreciate Graham's support over the nearly 26 years of the journal. The second most popular venue for his publishing according to Scopus is *JASMS*. He has helped often with reviews and service on the editorial board. Congratulations from all your friends at ASMS and *JASMS*. We are proud to know you.

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