

INTERVIEW

Spectroscopy Europe talks to:

Ian Jardine

Vice President, Global Research and Development, Analytical Technologies Group, Thermo Fisher Scientific Inc.

SE: What do you see are the challenges facing spectroscopists and how is Thermo Fisher helping them?

IJ: Thermo Fisher Scientific is always looking to develop rugged, high-throughput, cost-effective systems which have the latest technology and performance, but with the additional requirement that they are easy to use by lab technicians, and not just by PhD researchers.

SE: How do the needs of your customers in industry and academia differ, and how do you deal with those differences?

IJ: Generally, industrial customers are always looking for routine, cost-effective, usually validated, solutions, which can be implemented by trained technicians. Academic customers are usually looking for the latest and best technology, but often they struggle with the price. Our job is to satisfy both groups by providing "platforms" which can be configured for both needs. We always strive to develop very price competitive products, and that means that we have to have a very efficient and low cost product development organisation. Our goal, however, is to not just satisfy customers' current needs, but to delight them with features and product attributes they do not expect. Much of the "ease of use" of today's instruments, of course, comes from modern data systems and automated control, and so

we spend a significant proportion of our R&D budget on software.

SE: How do you see analytical instrumentation developing? (smaller, cheaper etc.)

IJ: It depends on the technology and customer need, of course. In the lab, for example, our new ICP-OE system (Thermo Scientific iCAP™) has been very successful because of new optics along with a higher dynamic range CID (charge injection device) camera which has increased sensitivity for key elements. Equally important, however, are the combination of small size and much lower cost of ownership. Again, in the elemental area, we have been surprised at how many hand held portable XRF systems we have sold to date (Thermo Scientific Niton® XRF). We recognised that there was a need for such a convenient system, but did not fully appreciate the pent-up demand. Perhaps there are other spectroscopies which could benefit from being in a convenient, but analytically powerful, portable format? At the other end of the spectrum, technical developments in mass spectrometry continue unabated. Our recent introduction and runaway success of an entirely new ultra high resolution, ultra mass accurate mass spectrometer analyser, the Thermo Scientific Orbitrap™, is unprecedented. And yet our recent invention and introduction of the new large peptide fragmentation technique electron transfer dissociation (ETD) implemented opti-



mally on the unique segmented linear ion-trap (Thermo Scientific LTQ™) may prove over the long run to be an even more important advance.

SE: How do you see Thermo Fisher's product development plans in the future, and what are the key drivers to new product development?

IJ: We will continue to blend new invention with the latest in engineering (hardware, electronics and software) to advance further the basic capabilities of instruments (speed, sensitivity, dynamic range, resolution, accuracy, precision and so on) working under the assumption that advances in these basics, at the right price, will always find a place in analytical science.

SE: What are the main factors to being successful in this market?

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IJ: Highest quality instruments at the best prices, delivered on time with affordable training and support—I think this is a universal constant.

SE: How long into the future do you need to look to plan for developments, and what tools do you use to analyse future needs?

IJ: We are generally working on a four year horizon with respect to strategy and product development. We also have research programmes which should pay off further out, but our “basic research” is always with a view to future products, of course. We work closely with a number of key academic labs on some of these concepts. The invention of ETD by Dr John Syka, an employee of Thermo Scientific, working on his PhD degree in the lab of Professor Don Hunt at the University of Virginia, along with other colleagues, is a particularly gratifying outcome relative to always paying attention to the basics (e.g. sensitivity, speed, solving new problems) and believing that the actual horizon is infinite.

SE: What's the most innovative idea or development (but perhaps not most obvious) you've seen in recent times, outside of Thermo Fisher?

IJ: Recent advances in DNA sequencing are very impressive. Advances in microscopy systems also appear to continue unabated.

SE: How much does Thermo Fisher spend on R&D a year?

IJ: Most Thermo Fisher R&D money is spent in analytical technologies and in 2007 will be >\$210M).

SE: Can you briefly tell us about your career and the job you are currently doing?

IJ: I am Vice President, Global Research and Development for Thermo Fisher Scientific, responsible for coordinating and overseeing all of Thermo Fisher's R&D efforts as well as driving higher levels of excellence in the R&D function. This includes project selection, programme discipline, leveraging technologies across Thermo Fisher and being a spokesperson externally to create more visibility for the company's innovative product advances. Before this I was Chief Technology Officer for the Life and Laboratory Sciences segment and Vice President of Mass Spectrometry. I joined the company in 1988, first as Director of Analytical Biochemistry, then director of Marketing and ultimately President of the Analytical Instruments Division, now a part of the Scientific Instruments Division. I received my doctorate in organic chemistry/mass spectrometry from the University of Glasgow, and then completed a fellowship at the Johns Hopkins University School of Medicine. Prior to joining Thermo Fisher, I held an assistant professorship at Purdue University and a professorship at the Mayo Clinic and Mayo Medical School.

SE: So you trained in mass spectrometry and mass spectrometry has been an important part of your career. Have you enjoyed learning more of other areas of spectroscopy and, indeed, analytical sciences in general?

IJ: Certainly, it's been great fun, especially with new systems mentioned before such as elemental analysis by XRF and ICP-OE, but also FT-IR imaging, PDA detectors for fast HPLC etc.

Also, with the merger with Fisher, I have enjoyed new perspectives in areas such as molecular biology and the positive effect good chemistry can often have for better spectroscopic analysis.

SE: Has an academic background been a help or a hindrance in your corporate career?

IJ: A great help for two reasons. First, I understand what a customer really wants, i.e. a product delivered that will work as advertised and will advance and not derail a career! Second, I see my current job in many ways as teaching or coaching great scientists and engineers to reach their full potential by making great products. An internal R&D Review is often likened to a PhD defence!

SE: Do you still have the opportunity to go to scientific conferences? If so, which do you enjoy most (or what type of conference do you enjoy most)?

IJ: Definitely: Pittcon and ASMS are staples and not to be missed. I attend other more specific conferences on emerging topics, e.g. RNAi, translational medicine, biomarkers, drug discovery and so on.

SE: What are your interests outside work?

IJ: Since my work by great good fortune covers pretty much everything of interest going on in the world today, I would have to say that outside of that it is, family, family and then family, but not necessarily in that order!