QUALITY MATTERS

BERM 14: it's that time again!

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I've been writing about the Biological & Environmental Reference Materials series of scientific symposia in this column since I started writing for *Spectroscopy Europe* way back in 2001. Since then we have had quite a few BERM Meetings, so, with the help of my long-time associate Alan W. Nichols in the USA, I thought I'd review "the story so far" as well as introducing BERM 14 which takes place between 11 and 15 October 2015 at the Gaylord National Resort & Convention Centre, just outside Washington DC at the National Harbour, Maryland, USA.

Why is this series of symposia so important? First, it has a long pedigree, going back to the early 1980s when many aspects of analytical metrology were in their infancy. The BERM series of symposia started with discussions between Dr Wayne Wolf, then a young research scientist at the US Department of Agriculture, Dr Herbert Munteau, a scientist at the EU Joint Research Centre at Ispra, Italy, and Dr Markus Stoeppler, in charge of the Environmental Specimen Bank at the KFA Institute at Jülich, Germany. They were all interested in reference materials, how to prepare stable matrix materials, how to assign values and produce meaningful certificates of analysis. This shared interest led to a decision to hold a scientific meeting. So in September 1983 BRM 1 (Biological Reference Materials 1) took place, organised by Wayne Wolf in Philadelphia, USA.

Over the last 32 years all of the issues that BRM looked at have endured, but the number of users of reference materials and certified reference materials has exploded: what was a small, essentially academic, fringe interest activity had become a global industry involving, in one way or another, every accredited and or regulated laboratory. As I write this column in late April 2015, reports from colleagues attending the 2015 European

Symposium on Food Safety in Cardiff, Wales, suggest that increased regulation in the US Food Testing sector is set to massively increase the volume of testing and the number of accredited laboratories. This will only further add to demand for reference materials.

From those early pioneers, all of whom I've had the pleasure of working with over the years, and one of which, Dr Wayne Wolf, expects to attend BERM 14, a global network of analytical metrologists has grown: many will be meeting at BERM 14, the next chapter in the story.

Introducing BERM 14

BERM returns to the USA this year, 2015, after an absence of eight years, so there will be much to talk about! The world of reference materials, standards and laboratory accreditation is changing rapidly with a lot happening, or going to happen, over the next three years that will have a significant impact on the use of reference materials and the producer community. In particular the conversion of ISO REMCO Guide 34 into a full ISO/ IEC Standard, 17034, together with a full revision of ISO/IEC 17025 will have a big impact on the analytical community. There are also signs that some instrumental analytical techniques, once only to be found as research tools, will move into mainstream analytical laboratories. Two that I find particularly interesting are quantitative NMR, or qNMR, and MALDI-TOF, a method for mass analysis of chemical compounds that combines matrix-assisted laser desorption/ionisation (MALDI) with time-of-flight (TOF) mass spectrometry.

qNMR offers precise, accurate determination of amount of substance and MALDI-TOF hints at the quantitative determination of specific bacteria as the databases underpinning the process continue to improve.

As ever BERM 14 will break new ground in that for this event Sigma—Aldrich has agreed to take over the operational organisation, plus the promotion and marketing of the event. In some respects BERM 12 laid the foundations for applying professional organisation and marketing to hosting a scientific symposium. As BERM moves about the globe and only returns infrequently to a previous organiser it makes sense to partner with commercial globally connected enterprises.

The BERM 14 Organisation Committee met for the first time during July 2014 and is already looking at exactly how to arrange what is expected to be an event running over four days and attended by upwards of 350 delegates. The BERM 14 website is up and running and the outline of the programme has been already set up with five main organised sessions to address the following general metrology topics:

- Recent developments in CRM production
- Current trends and future needs for CRMs
- Selection and proper use of CRMs
- Role of CRMs in assuring harmonisation and comparability of analytical measurements
- Improvements in availability and quality of CRMs

Within those main sessions there will be papers and posters looking at the following session topics:

- Purity assessment and quantitative NMR (qNMR)
- Challenges in reference material preparation
- Developments in reference materials for food, clinical and environmental analysis
- Reference materials for bioanalysis
- Microbiology and reference materials
- Reference materials for pharmaceuticals and biosimilars

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- Commutability of clinical reference materials
- Accreditation, proficiency testing and use of reference materials
- Recent guidance for reference material users
- Confidence in identification for preparation of biological-matrix reference materials
- Nanoparticles in environmental, food and medical samples
- Speciation analysis and reference materials
- Isotopes in natural matrix reference materials

To find out more about BERM 14 please visit the dedicated website: www.sigma-aldrich.com/berm.

To fully appreciate the impact the BERM Series has had it is necessary to take a walk back into history. I mentioned above that when BRM 1 took place in 1983, it attracted just 25 delegates who listened to 16 papers. BRM 2 followed in April 1986 and took place in Jülich, Germany, where 111 delegates listened to 35 papers and visited a poster presentation. The proceedings were published in Fresenius' Journal of Analytical Chemistry and the organisation was by Drs Wolf and Stoeppler. Over the next 10 years the BRM Symposia expanded into the BERM Symposia as environmental issues became ever more important. The meetings were alternately in Europe and North America, as follows, and this author became involved:

BRM 3: May 1988, Bayreuth, Germany **BERM 4:** Feb. 1990, Orlando, USA **BERM 5:** May 1992, Aachen, Germany: this was the first meeting that I took part in

BERM 6: April 1994, Kona, Hawaii USA BERM 7: April 1997, Antwerp, Belgium BERM 8: Sept. 2000, Bethesda, USA BERM 9 took place in June 2003, and was organised by Eurolab along with a team from BAM (German Federal Institute for Materials Research and Testing) in Berlin, Germany. Led by Harry Klich from BAM, the team prepared for an excellent meeting in Berlin. With close to 300 delegates and a contribution of 176 presentations it was a great success. A striking theme was the number of presentations dealing with reference

materials for bio/life science, diagnostic and pharmaceutical analysis. It was also the first BERM Meeting reported on in *Spectroscopy Europe*.

BERM 10 was held between 30 April and 4 May 2006 in Charleston, South Carolina. The organisation was a collaborative venture between NIST, NOAA (National Oceanic and Atmospheric Administration) and Charleston Events LLC: the involvement of a professional management group resulted in a very successful meeting.

BERM 11 broke the tradition: up to BERM 10, the symposium had alternated between continental Europe and the USA; but, BERM 11 was organised by the National Metrology Institute of Japan (NMIJ) under the Chair of Dr "Ken" Okamoto and took place from 29 October to 2 November 2007 at the Tsukuba International Congress Center Ibaraki, Japan. By all accounts it was a big success, attracting many delegates from the Asia—Pacific region and building on the success of BERM 6.

BERM 12 was held for the first BERM meeting in the UK, held at Keble College, Oxford University from 7 to 11 July 2009. This time LGC Group, in association with the UK National Metrology System, did all the hard work and the result was an excellent symposium with 153 delegates from 26 countries in attendance. Over the three days, the programme was made up of 14 sessions, with 69 oral presentations. Compared with the last European BERM meeting in Berlin, there was a very noticeable increase in both "bio" and "nano" metrology.

BERM 13 also broke with tradition as it was arranged and financially supported by the International Atomic Energy Agency (IAEA), a long-time supporter of the BERM Symposia. Support from IAEA, which took place in Vienna, Austria, from 25 to 29 June 2012, attracted close to 200 delegates and was able to achieve a much wider international audience with delegates from 55 countries, many previously unable to afford to attend BERM. So that brings the story back to BERM 14: I look forward to reporting on the events at BERM 14 later this year, in the meantime I hope that I'll be able to meet some of the readers of this column at BERM 14.

