

**Editorial**  
**Proceedings of the**  
**11<sup>th</sup> International Bologna Conference on**  
**Magnetic Resonance in Porous Media (MRPM11)**

This special edition of *Diffusion Fundamentals* features the proceedings of poster presentations made at MRPM11, the eleventh biennial meeting of the Magnetic Resonance in Porous Media Division of Groupement Ampere that was held at the University of Surrey, UK, from 9<sup>th</sup> to 13<sup>th</sup> September 2012.

NMR in porous media has widespread application in petroleum engineering, chemical engineering, plant and earth sciences, food sciences, biomedicine and soft matter. As a result, these meetings are traditionally very multi-disciplinary and attract an audience from both academia and industry. 2012 was no exception: a total of 192 delegates including 68 students from 21 countries across the world attended. Of these, around  $\frac{2}{3}$  had a University affiliation while the other  $\frac{1}{3}$  came from industrial, national or other research organisation laboratories.

As is now traditional at MRPM conferences, the meeting opened with four extended, invited tutorial lectures, presented in 2012 by Peter Blümler (University of Mainz), Rainer Kimmich (University of Ulm), Petrik Galvosas (Victoria University of Wellington) and Andrew Sederman (University of Cambridge). These four gave an overview of different aspects of magnetic resonance applied to porous materials at a level appropriate to those new to the field. The remainder of the meeting comprised eight further invited talks, which began each technical session. They were presented by Martin Hürlimann (Schlumberger-Doll Research), Tito Bonagamba (University of São Paulo), Federico Casanova (ACT GmbH), István Furó (KTH Stockholm), Henk van As (Wageningen University), Daniel Topgaard (Lund University), Monika Schönhoff (University of Münster), Yue Wu (University of North Carolina) and Song-I Han (University of California Santa Barbara) as well as 28 contributed talks and 99 posters.

The presentations were divided across 10 themes: Advances in Methodology; Applications to Energy and Related Materials; Mobile Magnetic Resonance; Applications to Bio-Materials, Pharmaceuticals and Food; Applications to Plants, Soils and Earth Sciences; Applications to Cells, Gels and Soft Matter; Applications to Polymeric Materials; Applications to Nano-Structured Materials; Applications to the Built Environment; and Applications of Dynamic Nuclear Polarisation and Hyperpolarisation.

What the presentations made clear at the meeting, and these proceedings record, is that the quality of the science presented continues to impress 22 years after the first meeting in the series, organised by Giulio Cesare Borgia and Paola Fantazzini at the University of Bologna in 1990. The proceedings present a valuable snapshot of the state-of-the-art of a technology that continues to advance. Readers will discover continued innovation related to both methodology and application across many sciences. Collectively, the papers

included offer an insight into what is currently possible and where the challenges remain.

Petrik Galvosas gave his opening tutorial presentation in place of Professor Sir Paul Callaghan, who died earlier in the year. It was preceded by a short tribute to Callaghan led by Bernhard Blümich. Callaghan was a giant of the field and as the week progressed his immense contribution became ever more apparent. Several speakers offered personal memories and thanks.

The Giulio Cesare Borgia prize is presented at MRPM meetings to an emerging researcher who shows the greatest promise for future scientific leadership. The Prize is established in memory of the late Professor Borgia's contribution to the development of Magnetic Resonance in Porous Media, his encouragement of young people setting out into this area of research and his work in establishing the conference series. The prize is sponsored by the Dipartimento di Ingegneria Civile, Ambientale e dei Materiali (DICAM) of the University of Bologna. In 2012, the prize was awarded to Jonathan Mitchell of the University of Cambridge "*for his outstanding contributions to the development of cryoporometry, multi-dimensional relaxation experiments and his understanding of the impact of internal magnetic field gradients*". Jonathan Mitchell's paper entitled "*A general approach to  $T_2$  measurements in the presence of internal gradients*" forms part of these proceedings.

In 2012, the traditional MRPM Poster Prize was linked to the Founder's Prize of BRSG, The NMR Group of the UK Institute of Physics. The prize, offered in memory of Professor E. Raymond Andrew, pioneer of magic angle spinning NMR, was awarded to Stefanie Eriksson of Lund University, Sweden, for her poster "*A new PGSE NMR pulse sequence gives isotropic diffusion weighting by magic-angle spinning of the q-vector*".

During the MRPM General Assembly it was agreed that from September 2012 the Steering Committee will consist of five members: Christoph Arns (University of New South Wales) Chair, Frank Stallmach (University of Leipzig) Vice-chair, Petrik Galvosas (Victoria University of Wellington) past and next meeting Chair, Peter McDonald (University of Surrey) 2012 meeting Chair and Paola Fantazzini (University of Bologna) ex-officio.

Original papers for these proceedings were submitted in follow up to the poster presentations at the meeting. A separate volume of Oral Proceedings is being published in parallel with this edition of *Diffusion Fundamentals* in the Elsevier journal *Microporous and Mesoporous Materials* (<http://www.journals.elsevier.com/microporous-and-mesoporous-materials/>).

Further oral and poster proceedings of former conferences in the series can be found in the *AIP Conference Proceedings* (vols. 1330, 2011; 1081, 2009); in special issues of *Magnetic Resonance Imaging* (vols 25 (4), 2007; 23 (2), 2005; 21 (3/4), 2003; 19 (3/4), 2001; 16 (5/6), 1998; 14 (7/8), 1996; 12 (2), 1994; and 9 (5), 1991) and in *Diffusion Fundamentals* (vols 14, 2011; 10, 2009; 5, 2007).

The organisers of MRPM11 are extremely grateful to the meeting sponsors, 12 of whom registered delegates at the meeting. The sponsors included: Advanced Magnetic Resonance Ltd; Anvendt Teknologi AS; Bruker BioSpin GmbH; Chevron; HeidelbergCement GmbH; BRSG: The Magnetic Resonance Group of Institute of Physics; Magritek Ltd; MR Solutions Ltd; Oxford Instruments; both Schlumberger-Doll Research (USA) and Schlumberger Gould Research (UK) ; Stelar Srl; University of Bologna; and University of Surrey Faculty of Engineering & Physical Sciences (International Committee). Several of these contributed to a series of well-received instrumentation displays from large and small manufacturers alike.

During the meeting, it was decided that MRPM12 will be hosted by Victoria University, New Zealand, from 9<sup>th</sup> to 13<sup>th</sup> February 2014. All those who read these proceedings and find interest within are warmly invited to attend.

*Guest editors:*

Peter J. McDonald, *Conference Chair, University of Surrey*  
Siegfried Stapf, *Chair, MRPM Division of Ampere*  
Paola Fantazzini, *University of Bologna*  
Villiam Bortolotti, *University of Bologna*  
Jonathan Mitchell, *University of Cambridge*

30<sup>th</sup> April 2013