



OVERVIEW

The International Bologna Conference on Magnetic Resonance in Porous Media, acronym MRPM, was first started at the University of Bologna, Italy, in 1990. In the past thirty years, MRPM travels across the world from Italy to UK, Belgium, Norway, Germany, France, USA, New Zealand. Over the years, MRPM becomes a gathering point for scholars, students and industrial professionals to exchange ideas and collaborate on important projects. It develops an inclusive culture for different people and diverse topics.

This year, the 15th MRPM conference travels to China, and to the beautiful city of Hangzhou. Hangzhou locates in the Zhejiang Province of China, one hundred kilometers south of Shanghai. Hangzhou was once the capital city of China about one thousand years ago. It was the east end of the silk road as it has been producing world-famous silk and tea for more than a thousand years. It is called “the heaven” in China for its gorgeous view of West Lake and the quiet retreats in tea plantation hills. Nowadays, Hangzhou is an economic powerhouse thanks to the fast development of internet economy.

MRPM15 is hosted by Zhejiang University, a prestigious multidisciplinary higher-education institute in China. It constitutes seven campuses and hosts more than 60,000 students. The people in Zhejiang University participate in top-level academic and industrial research activities. The university has a solid-state NMR center and a medical magnetic resonance imaging center. It also supports diverse research groups in the areas related to porous media.

The honorary chairman of this conference is Professor Jiangfeng Du who is known for the pioneering work in single molecular detection by magnetic resonance. The executive chairmen of the conference are Professor Xueqian Kong and Professor Ruiliang Bai.



CONFERENCE COMMITTEE

CONFERENCE CHAIRS

Honorary Chair 2022: Jiangfeng Du

Conference Chair 2022: XueqianKong Ruiliang Bai

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Lizhi Xiao Zhong Chen Feng Deng Fazhan Shi

Wei Wang Dan Wu Xin Zhou

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Honorary members

Paola Fantazzini Eiichi Fukushima

Steering Committee:

Chair: Yi-Qiao Song

Vice-Chair: Sabina Haber-Pohlmeier

Treasurer: Siegfried Stapf



Keynote + Invited Speakers

Keynote Speakers

Jeffrey Reimer, University of California, Berkeley, USA

Peter Basser, NIH, USA

Leonardo Brizi, University of Bologna, Italy

Klaus Schmidt-Rohr, Brandeis University, USA

Jiangfeng Du, University of Science and Technology of China, China

Lizhi Xiao, China University of Petroleum, China

Xin Zhou, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, China

Zhong Chen, Xiamen University, China

Wei Wang, Lanzhou University, China

Invited speakers

Rustem Valiullin, Leipzig University, Germany

Christoph Arns, University of New South Wales, Australia

Alexej Jerschow, New York University, USA

Aaron Rossini, Iowa State University, USA

Tito Bonagamba, Universidade de São Paulo, Brazil

Ville Telkki, University of Oulu, Finland

Evren Ozarslan, Linköping University, Sweden

William S. Price, Western Sydney University, Australia

Ashbrook Sharon, University of St Andrews, UK

Yongchao Su, Merck, USA

Dimitros Sakellariou, KU Leuven, Belgium

Villiam Bortolotti, University of Bologna, Italy

Ileana Jelescu, Lausanne University Hospital (CHUV) and University of Lausanne (UNIL), Switzerland

Magnus Herberthson, Linköping University, Sweden

Yue Wu, University of North Carolina at Chapel Hill, USA

Kong Ooi Tan, Ecole Normale Supérieure, France

Gerd Buntkowsky, TU Darmstadt, Germany

Yefeng Yao, East China Normal University, China

Hua Guo, Tsinghua University, China

Dan Wu, Zhejiang University, China



Chunsheng Zhou, Harbin Institute of Technology, China

Zheng Xu, Chongqing University, China

Fangrong Zong, Beijing University of Posts and Telecommunications, China

Jun Xu, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, China

Guangjin Hou, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China

Luming Peng, Nanjing University, China

Bingwen Hu, East China Normal University, China

NMR SchoolSpeakers

Yiqiao Song, Harvard University, USA

Bernhard Blümich, RWTH Aachen University, Germany

Daniel Topgaard, Lund University, Sweden

Ben Newling, University of New Brunswick, Canada

Zonghai Harry Xie, CoreLab, USA

Bruce Balcom, University of New Brunswick, Canada



Local Organizing Institute

Department of Chemistry Zhejiang University

<http://www.chem.zju.edu.cn/>

Zhejiang University Interdisciplinary Institute of Neuroscience and Technology

<http://www.ziint.zju.edu.cn/>

MOE Frontier Science Center for Brain Science and Brain-Machine Integration

<http://www.neuroscience.zju.edu.cn/>

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Program-AT-A-Glance

NMR SCHOOL, ZOOM (Aug. 21, Beijing 20:00-24:00, New York 8:00-12:00, Berlin 14:00-18:00)		
SUNDAY, AUGUST 21 ST 2022	19:55-20:00	Opening Speech
	20:00-24:00	Tutorial Lectures
MRPM15, ZOOM(Aug 22 to Aug 24, Beijing 20:00-24:00, New York 8:00-12:00, Berlin 14:00-18:00)		
MONDAY, AUGUST 22 ND , 2022	20:00-20:15	Welcome Remarks
	20:15-22:00	Keynote Session 1 (Jeffery Reimer & Peter Basser)
	22:00-24:00	Session 1: Methodology and Geophysics
Session 2: Hardware development and applications		
TUESDAY, AUGUST 23 RD , 2022	20:00-20:45	Keynote Session 2 (Leonardo Brizi)
	20:45-22:00	Session 3: Low field MR and Applications
		Session 4: Relaxometry and Dynamics
	22:10-24:00	Session 5: Diffusion and Dynamics
Session 6: New Applications of MR		
WEDNESDAY, AUGUST 24 TH , 2022	20:00-20:45	Keynote Session 3 (Klaus Schmidt-Rohr)
	20:45-22:00	Session 7: Solid-state and Nanoporous Materials
		Session 8: Relaxometry and related topics
	22:10-24:00	Session 9 - Biomedicine, Biophysics, and MRI
Session 10 - Adsorption in Porous Materials		
MRPM15, IN-PERSON(Aug 25 to Aug 26, Beijing 8:30-18:00, New York 20:30-6:00, Berlin 2:30-12:00) The attendees can attend the conference either online or in person.		
THURSDAY, AUGUST 25 TH , 2022	08:30-08:40	Opening Speech
	08:40-10:10	Keynote Session 4 (Jiangfeng Du & Lizhi Xiao)
	10:10-10:30	Photos & Coffee Break
	10:30-12:00	Session 11
	12:00-13:30	Lunch break
	13:30-15:05	Session 12
	15:05-16:00	Poster Session
	16:00-18:00	Session 13
FRIDAY, AUGUST 26 TH , 2022	08:30-10:30	Session 14
	10:45-12:00	Session 15
	12:00-13:30	Lunch break
	13:30-15:05	Session 16
	15:20-17:10	Session 17
	17:10-18:00	Awards & Closing ceremony



NMR SCHOOL SCHEDULE

Beijing Time

SUNDAY, AUGUST 21ST 2022 ZOOM ONLINE

Chair: Xueqian Kong & Ruiliang Bai

- 19:55 – 20:00 Opening speech
- 20:00 – 20:40 Lecture 1: Yiqiao Song, Harvard University, USA, *The history, current, and future of magnetic resonance in porous media*
- 20:40 – 21:20 Lecture 2: Bernhard Blümich, RWTH Aachen University, Germany, *NMR Hardware*
- 21:20 – 22:00 Lecture 3: Daniel Topgaard, Lund University, Sweden, *Translational motion and magnetic field gradients*
- 22:00 – 22:40 Lecture 4: Ben Newling, University of New Brunswick, Canada, *Take the current when it serves: flow quantification in magnetic resonance*
- 22:40 – 23:20 Lecture 5: Zonghai Harry Xie, CoreLab, USA, *NMR Applications in Rock Core Analysis – from Conventional to Unconventional*
- 23:20 – 24:00 Lecture 6: Bruce Balcom, University of New Brunswick, Canada, *Magnetic Resonance Imaging of Materials*



MRPM15 SCHEDULE

Beijing Time

MONDAY, AUGUST 22ND 2022 ZOOM ONLINE

MRPM15 Conference Opening Ceremony

20:00 – 20:15 Welcome Remarks

Keynote Session 1

Chair: Xueqian Kong & Ruiliang Bai

20:15 – 21:00 **Keynote lecture:** Jeffrey Reimer, University of California, Berkeley, USA, *A Molecular View of Carbon Capture with Porous Materials*

21:00 – 21:45 **Keynote lecture:** Peter Bassler, NIH, USA, *Probing Tissue Microstructure and Function*

Coffee Break

21:45 – 22:00

Session 1 - Methodology and Geophysics

Chair: Yiqiao Song, Harvard University, USA

22:00 – 22:25 **Invited lecture 1:** Rustem Valiullin, Leipzig University, Germany, *Advanced NMR cryoporometry*

22:25 – 22:50 **Invited lecture 2:** Christoph Arns, University of New South Wales, Australia, *NMR response interpretation utilizing Digital Rock Physics*

22:50 – 23:05 Normal oral 1: Jing Li, University of Oulu, Finland, *¹²⁹Xe NMR analysis reveals efficient gas transport between inborn micro-, meso- and macropores in geopolymers*

23:05 – 23:13 Short oral 1: Alfredo Ordinola, Linköping University, Sweden, *Measurement of the apparent diffusion propagator*

23:13 – 23:21 Short oral 2: Sabine Kruschwitz, Bundesanstalt für Materialforschung und -prüfung (BAM) und TU Berlin, Germany, *Non-destructive testing application examples using the NMR core-analyzing tomograph*

23:21 – 23:29 Short oral 3: Tatiana Monaretto, Center National De La Recherche Scientifique (CNRS), France, *Dynamics of pore filling by spatially-resolved relaxometry*

23:29 – 23:37 Short oral 4: Siegfried Stapf, TU Ilmenau, Germany, *Ageing of reservoir rocks: a multinuclear NMR relaxometry study*

23:37 – 23:45 Short oral 5: Mark Armstrong, University of Windsor, Canada, *Optimized Phase Cycling for Coherence Pathway Selection in Unbalanced Fast Spin-Echo*

23:45 – 23:53 Short oral 6: Shin Utsuzawa, Schlumberger, USA, *Ring cancellation in Carr-Purcell-Meiboom-Gill-type sequences*



Session 2 – Hardware development and applications

Chair: Bernhard Blümich, RWTH Aachen University, Germany

- 22:00 – 22:25 **Invited lecture 1:** Alexej Jerschow, New York University, USA, *MRI and magnetometry techniques for battery research and development*
- 22:25 – 22:50 **Invited lecture 2:** Dimitros Sakellariou, KU Leuven, Belgium, *Custom-made Magnetic Resonance: An application-driven instrumentation approach for materials engineering*
- 22:50 – 23:15 **Invited lecture 3:** Kong Ooi Tan, Ecole Normale Supérieure, *Building a 263 GHz Pulsed DNP Microwave Bridge, Waveguides, Probe, and MAS Drive Caps*
- 23:15 – 23:30 Normal oral 1: Thomas Hiller, Federal Institute for Geosciences and Natural Resources (BGR), Germany, *Towards a mobile soil moisture mapping application based on prepolarized surface-NMR*
- 23:30 – 23:45 Normal oral 2: Shiwen Chen, RIPED Petrochina, China, *Development and Applications of the MR Multi-Phase Flowmeter*
- 23:45 – 24:00 Normal oral 3: Xiaoguang Zhao, Tsinghua University, China, *Improving unilateral magnetic resonance efficiency using metamaterial-enhanced radio frequency coil*
- 24:00 – 24:08 Short oral 1: William Selby, University of New Brunswick, Canada, *A Simple Portable Magnetic Resonance Technique for Characterizing Circular Couette Flow of Non-Newtonian Fluids*



TUESDAY, AUGUST 23RD 2022 ONLINE

Keynote Session 2

Chair: TBA

20:00 – 20:45 **Keynote lecture:** Leonardo Brizi, University of Bologna, Italy, *Recent advances on single-sided NMR applications and proof of concept of low-field NMR Fingerprinting aided by Artificial Intelligence*

Session 3 –Low field MR and Applications

Chair: Xiaoguang Zhao, Tsinghua University, China

20:45 – 21:10 **Invited lecture 1:** Tito Bonagamba, Universidade de São Paulo, Brasil, *NMR signals from mechanically oscillating samples in a single-sided magnet: a simple Logging-While-Drilling simulator*

21:10 – 21:25 Normal oral 1: Eric Schmid, Karlsruhe Institute of Technology, Germany, *Low-Field NMR Sensor for Inline-Quality Control Applications*

21:25 – 21:40 Normal oral 2: Rui Chen, University of Shanghai for Science and Technology, China, *Study on low-field nuclear magnetic resonance analytical technique of edible oil*

21:40 – 21:48 Short oral 1: Agide Marassi, University of São Paulo, Brazil, *NMR signals from oscillating samples in the presence of a magnetic field gradient*

21:48 – 21:56 Short oral 2: Henry R. N. B. Enniful, Leipzig University, Germany, *Advanced Kernel-Based NMR Cryoporometry Characterization of Mesoporous Solids*

Session 4 –Relaxometry and Dynamics

Chair: Siegfried Stapf, TU Ilmenau, Germany

20:45 – 21:10 **Invited lecture 1:** Ville Telkki, University of Oulu, Finland, *Ultrafast multidimensional relaxation and diffusion measurements*

21:10 – 21:25 Normal oral 1: Manuel Velasco, Universidad Nacional de Córdoba, Argentina, *Organic matter detection in T_1 - T_2 relaxation maps for shale reservoirs*

21:25 – 21:40 Normal oral 2: Mohammad Sadegh Zamiri, University of New Brunswick, Canada, *Shale Characterization Using 2D Magnetic Resonance T_1 - T_2^* Relaxation Correlation and SPRITE MRI*

21:40 – 21:55 Normal oral 3: Tristhal Parasram, University of Windsor, Canada, *Magnetic Resonance T_1 Spectrum Analysis with Neural Networks*

Coffee Break

22:00 – 22:10



Session 5 –Diffusion and Dynamics

Chair: Fangrong Zong, Beijing University of Posts and Telecommunications

- 22:10 – 22:35 **Invited lecture 1:** Evren Özarlan, Linköping University, Sweden, *Characterizing structural heterogeneity and water dynamics with novel diffusion MR*
- 22:35 – 23:00 **Invited lecture 2:** William S. Price, Western Sydney University, Australia, *Faster NMR Diffusion Measurements for Porous Media and Reactions*
- 23:00 – 23:15 Normal oral 1: Benedict Newling, University of New Brunswick, Canada, *Laminar Velocity Profile Measurements from Spin Echoes at Incomplete Polarization*
- 23:15 – 23:23 Short oral 1: Anne Selent, University of Oulu, Finland, *Laplace NMR study of surfactants in aqueous solutions*
- 23:23 – 23:31 Short oral 2: Sarah Mailhot, University of Oulu, Finland, *2D variable echo time CPMG acquisition for D - T_2 correlation measurements utilizing a constant gradient*
- 23:31 – 23:39 Short oral 3: Alice Ducroix, Laboratoire PHENIX, Sorbonne Université, CNRS, France, *Dynamics and molecular transport of water inside boehmite suspensions probed by PFG-NMR*
- 23:39 – 23:47 Short oral 4: Carlo Golini, University of Bologna, Italy, *A single-sided NMR procedure to study structural differences of the cartilage tissue*
- 23:47 – 23:55 Short oral 5: Arthur Gustavo de Araujo-Ferreira, University of São Paulo, Brazil, *A Benchtop Single-Sided RF-Shielded Magnet for Low Field NMR applications*



Session 6 –New Applications of MR

Chair: Zonghai Harry Xie, CoreLab, USA

- 22:10 – 22:35 **Invited lecture 1:** Aaron Rossini, Iowa State University, USA, *Structural Characterization of Boron Nitride and Oxide Materials by Dynamic Nuclear Polarization and Ultrahigh Field 35 T Solid-State NMR Spectroscopy*
- 22:35 – 23:00 **Invited lecture 2:** Yongchao Su, Merck, USA, *Molecular Details of Amorphous Pharmaceuticals from Solid-State NMR and X-ray Atomic Pair Distribution Function*
- 23:00 – 23:15 Normal oral 1: Jyotsana Ojha, Indian Institute of Science Education and Research Mohali India, India, *NMR spectroscopic approach to investigate the dynamics and heterostructure of fluorinated ionic liquids and their binary mixtures*
- 23:15 – 23:23 Short oral 1: Siegfried Stapf, TU Ilmenau, Germany, *Binary fluid systems in porous media: redistribution of miscible and immiscible fluids and the effect on their relaxation properties*
- 23:23 – 23:31 Short oral 2: Bulat Gizatullin, Technische Universität Ilmenau, Germany, *Studying of Radicals on the Surface by DNP FFC: Ageing or Origin?*
- 23:31 – 23:39 Short oral 3: Tian He, Zhejiang University, China, *Cortical Bone under Ultrahigh Magnetic Field: Relaxation, Spectroscopy and Micron-resolution Imaging*
- 23:39 – 23:47 Short oral 4: Yashu Kharbanda, University of Oulu, Finland, *Cheese Maturation Studies by Single-Sided Magnet*
- 23:47 – 23:55 Short oral 5: Tiia Jacklin, University of Oulu, Finland, *Modeling Xe NMR in carbon nanotubes*



WEDNESDAY, AUGUST 24TH 2022 ONLINE

Keynote Session 3

Chair: Xueqian Kong

20:00 – 20:45 **Keynote lecture:** Klaus Schmidt-Rohr, Brandeis University, USA, *Solid-State NMR of Polymer–MOF Composites*

Session 7 – Solid-state and Nanoporous Materials

Chair: Ben Newling, University of New Brunswick, Canada

20:45 – 21:10 **Invited lecture 1:** Sharon Ashbrook, University of St Andrews, UK, *Exploiting ¹⁷O Isotopic Enrichment in NMR Spectroscopy of Microporous Materials*

21:10 – 21:25 Normal oral 1: Jun Xu, Nankai University, China, *Deconvolution of Metal Apportionment in Bulk Metal–Organic Frameworks*

21:25 – 21:40 Normal oral 2: Frédérique Pourpoint, Centrale Lille, France, *Solid-State NMR to study Metal–Organic Frameworks*

21:40 – 22:48 Short oral 1: Jeremias Zill, Leipzig University, Germany, *Kinetics of a structural phase transition in MIL-53(Al)-NH₂*

21:48 – 21:56 Short oral 2: Daniil I. Kolokolov, Boreskov Institute of Catalysis, Russia, *Probing light hydrocarbons mobility by ²H NMR in nanoporous UiO-66 MOF: effects of inorganic centers hydroxylation and framework defects*

Session 8 – Relaxometry and related topics -II

Chair: Dan Benjamin, National Institute of Health, USA

20:45 – 21:10 **Invited lecture 1:** Villiam Bortolotti, University of Bologna, Italy, *Inversion problems and robust NMR parameter estimation: the Uniform Penalty principle extension Mupen*

21:10 – 21:25 Normal oral 1: Keelan O'Neill, University of Western Australia, Australia, *Pore size and relaxation characterisation of Lunar and Martian planetary simulants*

21:25 – 21:40 Normal oral 2: Neil Robinson, University of Western Australia, Australia, *Functional group resolved relaxation in porous media*

21:40 – 21:48 Short oral 1: Everton Lucas-Oliveira, University of Sao Paulo, Brazil, *NMR on Porous Media: Surface relaxivity and Magnetic Susceptibility*

21:48 – 21:56 Short oral 2: Can Liang, Changzhou Institute of Technology, China, *Rock Wettability Characterization Using NMR Free Induction Decay*

Coffee Break

22:00 – 22:10



Session 9 -Biomedicine, Biophysics, and MRI

Chair: Evren Ozarslan,Linköping University, Sweden

- 22:10 – 22:35**Invited lecture 1:** Ileana Jelescu,Lausanne University Hospital (CHUV) and University of Lausanne (UNIL), Switzerland, *Water exchange across cell membranes in brain gray matter*
- 22:35 – 23:00**Invited lecture 2:** Magnus Herberthson,Linköping University,Sweden, *The influence of diffusion across semi-permeable membranes on the MR signal: Insights from a one-dimensional model*
- 23:00 – 23:15 Normal oral 1:Ke Dai,Shanghai Jiao Tong University, China, *High-resolution diffusion-weighted MRI combining markerless prospective motion correction and locally low-rank constrained reconstruction*
- 23:15 – 23:30 Normal oral 2:Jonathan MacNeil,University of Windsor, Canada, *T₂ Mapping using Fast Spin Echo with Point Spread Function Correction*
- 23:30 – 23:45 Normal oral 3: Yonghong Ding,Max Planck Institute for Multidisciplinary Science, Germany, *In-cell real-time monitoring of pyruvate metabolic conversion on Parkinson cell models via para-hydrogen induced polarization (PHIP)*
- 23:45 – 23:53 Short oral 1: Alfredo Ordinola,Linköping University,Sweden,*Characterizing structure and diffusion exchange: Comparing subsampling strategies*
- 23:53 – 24:01 Short oral 2: Yu Zeng,Zhejiang University,*Comparisons of Parkinson's Disease Related Patterns in ASL MRI and FDG PET*



Session 10 – Adsorption in Porous Materials

Chair: Daniel Topgaard, Lund University, Sweden

- 22:10 – 22:35 **Invited lecture 1:** Yue Wu, University of North Carolina at Chapel Hill, USA, *Correlations of Microscopic and Macroscopic Properties of Porous Media Obtained by NMR-detected Isotherm Technique*
- 22:35 – 23:00 **Invited lecture 2:** Gerd Buntkowsky, TU Darmstadt, Germany, *Solid-state NMR and DNP studies of guest molecules confined in porous silica materials*
- 23:00 – 23:15 Normal oral 1: Ignacio José Chevallier-Boutell, IFEG, Argentina, *Non-negligible interactions of alkanes with silica mesopores affect self-diffusivity: a combined experimental and theoretical approach*
- 23:15 – 23:30 Normal oral 2: Janis Hessling, University of Münster, Germany, *Spin relaxation studies of an ionic liquid-based electrolyte confined in porous materials*
- 23:30 – 23:45 Normal oral 3: Minghui Zhang, Inner Mongolia Agricultural University, China, *Cell Wall Water States in Wood Studied by TDNMR during Adsorption*
- 23:45 – 23:53 Short oral 1: Roya Khalili, University of Oulu, Finland, *Local structures and adsorption properties of rare earth phosphates*
- 23:53 – 24:01 Short oral 2: Marie Bernardi, The University of Mons, Belgium, *Benchtop NMR relaxometry for the follow-up of Ni(II) removal by three ion exchange resins.*



THURSDAY, AUGUST 25TH 2022 (HYBRID)

08:30 – 08:40 am

Opening speech

Chair: Zhou Xin, Wuhan Institute of Physics and Mathematics, China

08:40 – 09:25 am

Keynote lecture 1: Jiangfeng Du, University of Science and technology of China, China, *Single molecule magnetic resonance spectroscopy and imaging*

09:25 – 10:10 am

Keynote lecture 2: Lizhi Xiao, China University of Petroleum, China, *Borehole NMR Inside-out Imager for Porous Materials*

Coffee Break and Photo

10:10 – 10:30

Session 11

Chair: Wei Wang, Lanzhou University, China

10:30 – 10:55 am

Invited lecture 1: Yefeng Yao, East China Normal University, China, *Molecularly targeted MRI and MRS*

10:55 – 11:10 am

Oral 1: Zhihao Long, China University of Petroleum (Beijing), China, *Determining Winding Patterns for RF Coils on Downhole Magnetic Resonance Imaging Tool Using Stream Functions and Target-Field Method*

11:10 – 11:25 am

Oral 2: J. Beau W. Webber, Lab-Tools Ltd., UK, *The implementation of an easy-to-apply NMR Cryoporometric instrument for porous materials*

11:25 – 11:40 am

Oral 3: Xinyu Zhang, China University of Petroleum (Beijing), China, *Pore structure characterization of complex lithology reservoir based on NMR logging*

11:40 – 11:55 am

Oral 4: Lu Zhang, China University of Petroleum (Beijing), China, *Temperature sensitivity of NMR porosity*

Lunch and Break

12:00 – 13:30 am



Session 12

Chair: Jun Xu, Wuhan Institute of Physics and Mathematics

- 13:30 – 14:15 pm **Keynote lecture:** Xin Zhou, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, China, *Hyperpolarized Xenon multinuclear and CEST MRI in biomedicine*
- 14:15 – 14:40 pm **Invited lecture 1:** Hua Guo, Tsinghua University, China, *3D Diffusion MRI using Simultaneous Multi-slab Imaging*
- 14:40 – 15:05 pm **Invited lecture 2:** Dan Wu, Zhejiang University, China, *Microstructural imaging with diffusion-time-dependent diffusion MRI*
- 15:05 – 16:00 pm **Poster Session and Coffee Break**

Session 13

Chair: Chunsheng Zhou, Harbin Institute of Technology, China

- 16:00 – 16:15 pm Oral 1: Yao Fu, French Alternative Energies and Atomic Energy Commission, France, *Revealing hidden defects in Metal-Organic Frameworks by solid-state NMR*
- 16:15 – 16:30 pm Oral 2: Guowen Jin, China University of Petroleum (Beijing), China, *A New Method for Pore Structure Characterization of Porous Rocks Based on Low Field NMR*
- 16:30 – 16:45 pm Oral 3: Xinglong Lei, China University of Petroleum (Beijing), China, *Quantitative evaluation of local porosity and heterogeneity in porous media with low-field NMR imaging*
- 16:45 – 17:00 pm Oral 4: Zhe Zhang, China University of Petroleum (Beijing), China, *Prediction of NMR T_2 Spectrum AND T_2 CUT-OFF VALUE with Machine Learning Model*
- 17:00 – 17:15 pm Oral 5: Guanghui Shi, China University of Petroleum (Beijing), China, *Automatic optimization of pulse sequence based on closed-loop control strategy*
- 17:15 – 17:30 pm Oral 6: Zhen Xie, China University of Petroleum (Beijing), China, *Numerical simulation study on the influence of temperature on the restricted diffusion in porous media*
- 17:30 – 17:45 pm Oral 7: Zijian Jia, University of Shanghai for Science and Technology, China, *Application of artificial intelligence on 2D NMR to identify shale components*
- 17:45 – 18:00 pm Oral 8: Jiangfeng Guo, China University of Petroleum, China, *Two-dimensional magnetic resonance T_1 - T_2^* relaxation correlation measurements and spectra*

Dinner



FRIDAY, AUGUST 26TH 2022 (HYBRID)

Session 14

Chair: Lizhi Xiao, China University of Petroleum, China

- 08:30 – 09:15 am **Keynote lecture:** Zhong Chen, Xiamen University, China, *High-resolution NMR spectroscopy for complex chemical and biological samples*
- 09:15 – 09:40 am **Invited lecture 1:** Chunsheng Zhou, Harbin Institute of Technology, China, *Investigations into moisture-dependent pore structure of cement-based materials through the Low-Field NMR relaxation technique*
- 09:40 – 10:05 am **Invited lecture 2:** Zheng Xu, Chongqing University, China, *A Portable Shielding-free 50mT Head Magnetic Resonance Imaging System*
- 10:05 – 10:30 am **Invited lecture 3:** Fangrong Zong, Beijing University of Posts and Telecommunications, China, *Data processing in multi-dimensional NMR and MRI*

Coffee Break

10:30 – 10:45 am

Session 15

Chair: Bingwen Hu, East China Normal University, China

- 10:45 – 11:00 am Oral 1: Shuanglan Yan, China University of Petroleum (Beijing), China, *The Study on NMR Response Mechanism and Evaluation Method of Basic Volcanic Rock*
- 11:00 – 11:15 am Oral 2: Ruiqi Fan, China University of Petroleum (Beijing), China, *Quantitative Evaluation Method of Movable Oil Saturation in Shale Oil by NMR*
- 11:15 – 11:30 am Oral 3: Yingyao Qin, Yangtze University, China, *Improvement of T_2 - ρ_c 2D NMR inversion method for characterizing pore-throat connectivity*
- 11:30 – 11:45 am Oral 4: Sihui Luo, China University of Petroleum (Beijing), China, *A Study on Improving Low-field NMR Echo Data Quality with Dictionary Learning*
- 11:45 – 12:00 am Oral 5: Gang Luo, China University of Petroleum, China, *A Study on Multi-exponential Inversion of NMR Relaxation Data with Deep Learning*

Lunch and Break

12:00 – 13:30



Session 16

Chair: Luming Peng, Nanjing University, China

- 13:30 – 14:15 pm **Keynote lecture:** Wei Wang, Lanzhou University, China, *Host-Guest Chemistry of Covalent Organic Frameworks Revealed by Solid-State NMR Spectroscopy*
- 14:15 – 14:40 pm **Invited lecture 1:** Jun Xu, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, China, *Insight into active sites and catalytic reactions over metal-zeolites from solid-state NMR spectroscopy*
- 14:40 – 15:05 pm **Invited lecture 2:** Guangjin Hou, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China, *Solid-state NMR studies of syngas conversion on oxide-zeolite bifunctional catalysts*

Coffee Break

15:05 – 15:20 pm

Session 17

Chair: Yefeng Yao, East China Normal University, China

- 15:20 – 15:45 pm **Invited lecture 3:** Luming Peng, Nanjing University, China, *Unveiling the surface structure of ZnO nanorods and H₂ activation mechanism with ¹⁷O NMR spectroscopy*
- 15:45 – 16:10 pm **Invited lecture 4:** Bingwen Hu, East China Normal University, China, *Magnetic resonance for Li-ion battery: from NMR to EPR*
- 16:10 – 16:25 pm Oral 1: Haiming Liu, ShanghaiTech University, China, *Structural and Dynamic Study of MOFs by Solid-State NMR*
- 16:25 – 16:40 pm Oral 2: Feng Deng, PetroChina Research Institute of Petroleum Exploration & Development, China, *Magnetic Resonance Flow Measurement Method for Petroleum Industry*
- 16:40 – 16:55 pm Oral 3: Xi Chen, Beijing Limecho Technology Co., Ltd., China, *Hydration characterization of cement with recycled concrete powder by using ¹H NMR*
- 16:55 – 17:10 pm Oral 4: Jing Qiao, Harbin Institute of Technology, China, *Investigation into the relationship between the compressive strength and pore structure of saturated white cement mortars*
- 17:10 – 18:00 pm Awards & Closing ceremony

Dinner