IMPORTANT REMINDER: If you have an accepted contribution to the conference, please check the appropriate list of oral and/or poster presentations to be sure that your paper has been included in the schedule. If your paper is missing, please contact David Ailion (nmr@physics.utah.edu) immediately.

The ICMRM program of oral presentations can be found by scrolling down to the next page. Poster presentations can be found here.

ICMRM PROGRAM

MONDAY, SEPT. 22 - MORNING

8:00 - 9:00 AM WELCOME AND KEYNOTE

8:00-8:15 **WELCOME**

8:15-9:00 **KEYNOTE LECTURE (Chair: *David C. Ailion*)**
Alexander Pines, *MR Spectroscopy and Microscopy at Various Distances and Angles.*

9:00 - 10:51 AM SESSION I: SOLID STATE NMR/NQR
Chair: *David C. Ailion*

INVITED LECTURES

9:00-9:30 **Robert Blinc,** *Disorder in $BaTiO_3$ and $SrTiO_3$.*
9:30-10:00 **Sean E. Barrett,** *Optically Pumped NMR of Quantum Wells Using a Bottoms Up Approach to Study Electron Spin Physics on Sub-Micron Length Scales.*

CONTRIBUTED LECTURES

10:00-10:17 **A. J. Fagan, G. R. Davies, J. M. S. Hutchinson, D. J. Lurie,** *Continuous Wave NMR Imaging of Short T_2 Materials.*
10:17-10:34 **Stephanie Vierkötter, Catherine Ward, David Gregory,** *Quadrupole Resonance: A Different "Spin" on Nondestructive Inspection of Polymeric Fiber-Reinforced Composite Structures.*
10:34-10:51 **Peter J. McDonald,** *Water Distribution and Skin Formation in Semi-Crystaline Polymer Layers Cast From Solution: A Magnetic Resonance Imaging Study.*

10:51 - 11:15 AM COFFEE BREAK

11:15 - 12:55 PM SESSION II: NOVEL NMR TECHNIQUES I
Chair: *Paul T. Callaghan*

INVITED LECTURES

11:15-11:45 **Michael V. Romalis,** *High Resolution Atomic Magnetometers.*
11:45-12:15 **Gil Navon,** *^2H DQF Spectroscopic MRI as a Tool for the Study of the Microstructure and Biomechanics of Articular Cartilage.*

CONTRIBUTED LECTURES

12:15-12:35 **Bruce J. Balcom, Meghan Halse, Bryce MacMillan,** *Centric Scan SPRITE MRI.*
12:35-12:55 **Janez Stepišnik,** *MR Microscopy of Flow Dynamics in Porous Structures.*

MONDAY, SEPT. 22 - AFTERNOON

12:55 - 2:20 PM LUNCH

2:20 - 3:58 PM SESSION III: MATERIALS NMR

Chair: *Karen L. Anderson*

INVITED LECTURE

2:20-2:50 **Steven W. Sinton,** *Single-Sided Magnetic Resonance Relaxometry and Elastography of Elastomer Structures.*

CONTRIBUTED LECTURES

2:50-3:07 **Stephen D. Beyea, S. Jill Glass, Andrew McDowell,** *Non-Destructive Microstructural Characterization of Ceramics: Spatially Resolved Gas Adsorption using NMRI.*

3:07-3:24 **Nina C. Shapley, Marcos A. d'Avila, Jeffrey H. Walton, Ronald J. Phillips, Stephanie R. Dungan, Robert L. Powell,** *Kinetics and Mechanism of Mixing in Concentrated, Oil-In-Water Emulsions.*

3:24-3:41 **Farida Grinberg, Günter Majer,** *Long-Time Scale Molecular Dynamics of Ordered Fluids.*

3:41-3:58 **David Last, Ludovic De Rochefort, Françoise Peyrin, Geneviève Guillot,** *3D MR Microscopy of Trabecular Bone: Architecture Parameters by Reference to High Resolution Microtomography (Synchrotron Radiation) on Matched ROIs.*

3:58 - 4:20 PM COFFEE BREAK

4:20 - 5:58 PM SESSION IV: NMR IN GASES

Chair: *Gernot Laicher*

INVITED LECTURE

4:20-4:50 **Mark S. Conradi,** *Probing Lung Microstructure With Laser-Polarized ^{3}He Gas Diffusion.*

CONTRIBUTED LECTURES

4:50-5:07 **L. Hedlund, Z. Vujaskovic, E. Ward, W. Kurylo, C. Wheeler, G. Cofer, G. A. Johnson,** *Hyperpolarized ^{3}He Detection of Radiation-Induced Lung Injury in Rats.*

5:07-5:24 **R. H. Acosta, S. Han, P. Blümler, S. Appelt, H. W. Spiess,** *Simultaneous MRI of Hyperpolarized ^{3}He and ^{129}Xe in Lungs.*

5:24-5:41 **Dean O. Kuethe, Rebecca Montano, Natalie Adolphi,** *Imaging Lung Tissue is Not So Difficult*

5:41-5:58 **Natalie Adolphi, Dean O. Kuethe,** *First T_1 Images of Inert Fluorinated Gases in Lungs.*

6:00 - 8:00 PM **POSTER SESSION I**
(Snacks will be served during the poster sessions.)

TUESDAY, SEPT. 23 - MORNING

8:30 - 10:28 AM **SESSION V: BIOMEDICAL MAGNETIC RESONANCE I**
Chair: *G. Allan Johnson*

INVITED LECTURES

8:30-9:00 **R. Mark Henkelman**, *MR Microscopy for High Throughput Mouse Phenotyping.*

9:00-9:20 **Robert A. Wind**, *In vivo High-resolution Proton NMR Spectroscopy in a Rotating Mouse.*

CONTRIBUTED LECTURES

9:20-9:37 **S.C. Grant, J.M. Wilson, M.S. Petrik, S.J. Blackband C.A. Shaw,** *MR Microscopy of an Exogenous ALS-PDC Mouse Model: High-Resolution T_2^*- and Diffusion-Weighted Imaging at 17.6 T.*

9:37-9:54 **Y. Seo, A. Takamata, T. Ogino, H. Morita, M. Murakami,** *Water Permeability of Capillaries in the SFO of Rats Determined by T_1 Relaxation Time Measured by ^1H MRI.*

9:54-10:11 **Yoshimasa Matsuda, Shinya Ono, Tomoyuki Haishi, Katsumi Kose,** *MR Microscopy of a Large Human Embryo Collection (Kyoto Collection) Using a Four-Channel Super-Parallel MR Microscope at 2.34 T.*

10:11-10:28 **T. Weber, T. Neuberger, V. Behr, I. Wieland, U. Bogdahn, A. Haase, A. Steinbrecher, C. Faber,** *Central Nervous System* In-Vivo *MR Microscopy at 17.6 T.*

10:28 - 10:55 AM **COFFEE BREAK**

10:55 - 12:55 PM **SESSION VI: YOUNG INVESTIGATORS**
Chair: *Robert E. Botto*

10:55-11:25 **Sascha Köhler,** *Investigation of the Microstructure of The Heart: Comparison Between T_2*, Diffusion Tensor, and SSFP Imaging.*

11:25-11:55 **Elke Kossel,** *Flow measurements below 50 µm: NMR microscopy experiments in lithographic model pore spaces.*

11:55-12:25 **Song-I Han,** *Amplification of Xenon NMR and MRI by Remote Detection.*

12:25-12:55 **Juan Perlo,** *3D Imaging With a Single-Sided NMR Sensor.*

12:55 PM **GROUP PHOTO**

TUESDAY, SEPT. 23 - AFTERNOON

1:30PM - ?? **CONFERENCE EXCURSION** (optional)

There will be an additional charge for the excursion, which will include a box lunch for each participant.

WEDNESDAY, SEPT. 24 – MORNING

8:30 - 10:21 AM **SESSION VII: NOVEL NMR TECHNIQUES II**
Chair: *Charles H. Pennington*

INVITED LECTURES

8:30-9:00 **G. Allan Johnson,** *Image Based Phenotyping.*
9:00-9:30 **Russell E. Jacobs,** *Looking Deeper into Development Applications of High Resolution MRI in Developmental Biology.*

CONTRIBUTED LECTURES

9:30-9:47 **Henk Van As, Daniel Polders, P. Adrie de Jager, Frank J. Vergeldt,** *Diffusion and Displacement Analysis in Heterogeneous, Multicompartment (Bio-) Systems by PFG-Multi-Echo NMR/MRI.*
9:47-10:04 **A.G.Webb,** *Improving the Spatial Point Spread Function in Magnetic Resonance Microscopy Using Variable-Time Phase Encoding.*
10:04-10:21 **Pablo J. Prado, Serge Bobroff,** *Exo-MRI.*

10:21 - 10:45AM **COFFEE BREAK**

10:45AM - 12:36 PM **SESSION VIII: BIOLOGICAL NMR**
Chair: *Kimberlee Potter*

INVITED LECTURES

10:45-11:15 **Charles H. Pennington,** *Magnetic Resonance Microscopy at the Micron Scale, and "DESIRE".*
11:15-11:45 **Edward W. Hsu,** *Diffusion Tensor Microscopy: From Molecules to Organs.*

CONTRIBUTED LECTURES

11:45-12:02 **Davide Santoro, Walter Köckenberger**, *Optimization of Indirect Detected ^{13}C Spectroscopy and Micro Imaging Experiments for In-Vivo Applications in Plants.*

12:02-12:19 **Buntoku Sugihara, Hidehito Tochio, Masahito Morita, Sewon Ki, Azusa Okada, Tetsuro Kokubo, Masahiro Shirakawa,** *In-Vivo ^{31}P MRI Monitoring of Gene Expression in Yeast Cells.*

12:19-12:36 **Ilja Kaufmann, Lars Wegner, Ulrich Zimmermann, Axel Haase,** *3D NMR Microscopy of Intact Plant Root Systems.*

WEDNESDAY, SEPT. 24 – AFTERNOON

12:36 - 2:10 PM LUNCH

2:10 - 3:48 PM SESSION IX: DIFFUSION/FLOW

Chair: *Joseph D. Seymour*

INVITED LECTURE

2:10-2:40 **Rainer Kimmich,** *Probing into Transport of Fluids in Porous Media on Length Scales from Millimeters to Nanometers by NMR.*

CONTRIBUTED LECTURES

2:40-2:57 **K.G. Hollingsworth, J.P. Hindmarsh, A.J. Sederman, L.F. Gladden and M.L. Johns,** *Fast Magnetic Resonance Characterization of Multi-Phase Liquids.*

2:57-3:14 **Dmitriy A. Yablonskiy, G. Larry Bretthorst, and Joseph J.H. Ackerman,** *Statistical Approach in the Theory of Diffusion Attenuated MR Signals in Biological Systems.*

3:14-3:31 **Alexandre A. Khrapitchev, Siegfried Stapf, Paul T. Callaghan, Bernhard Blümich,** *From Porous Media to Fluidized Beds – the Next Step of Complex Fluid Dynamic Investigations.*

3:31-3:48 **Galina E. Pavlovskaya,** *Velocity Fields During the Contraction Flow of Viscoelastic Fluids.*

3:48 - 4:20 PM COFFEE BREAK

4:20 - 6:00 PM SESSION X: NOVEL NMR TECHNIQUES III

Chair: *Robert A. Wind*

INVITED LECTURES

4:20-4:50 **Bernhard Blümich,** *Unilateral NMR: Concepts and Applications of the NMR-MOUSE.*

4:50-5:20 **Bryan H. Suits,** *Advances in Spin-1 NQR for Explosives Detection in the Field: Implications for NQR imaging.*

CONTRIBUTED LECTURES

5:20-5:40 **Yang Xia, Paul T Callaghan,** *Imaging the Tubeless Siphon by NMR Microscopy*

5:20-6:00 **Markus Küppers, Siegfried Stapf, Bernhard Blümich,** *NMR Velocity Studies on a Falling Liquid Film.*

6:00 - 8:00 PM POSTER SESSION II

(Snacks will be served during the poster sessions.)

THURSDAY, SEPT. 25 – MORNING

8:30 - 10:11 AM SESSION XI: NMR HARDWARE/ INDUSTRIAL APPLICATIONS

Chair: *Eiichi Fukushima*

INVITED LECTURES

8:30-9:00 **Tomoyuki Haishi,** *Compact NMR/MRI Systems Using Permanent Magnetic Circuits.*

9:00-9:30 **Koji Saito,** *Industrial Application of NMR imaging to Steel Making Process.*

CONTRIBUTED LECTURES

9:30-9:37 **Stephen R. McComb,** *Industry Trends and New Product Development for Hyperpolarization of Noble Gases.*

9:37-9:54 **Katsumi Kose, Yoshimasa Matsuda, Takeaki Kurimoto, Sadanori Tomiha, Seitarou Hashimoto, Yukako Yamazaki, Tomoyuki Haishi, Shin Utsuzawa,** *Development of a Compact MRI for Bone Volume Density Measurements.*

9:54-10:11 **Volker C. Behr, M. Oechsner, D. Gareis, I. Wieland, T. Neuberger, A. Haase, C. Faber,** *First Evaluation of Very High Field Multi-Channel Probes for Double-Resonant- and Quadrature-Detection at 17.6 T.*

10:11 - 10:35AM COFFEE BREAK

10:35 - 11:25 AM SESSION XII: HYPERPOLARIZED NUCLEI

Chair: *Gil Navon*

INVITED LECTURE

10:35-11:05 **Angelo Bifone,** *Hyperpolarized Nuclei: Beyond Helium and Xenon.*

CONTRIBUTED LECTURE

11:05-11:25 **Satyanarayana Anala, Galina E. Pavlovskaya, Prakash Pichumani, Todd J. Dieken, Michael D. Olsen, and Thomas Meersmann,** *High Density Xenon-129 Optical Pumping for In-Situ NMR Spectroscopy of Methane Combustion.*

11:25 AM - 12:33 PM SESSION XIII: CHEMICAL AND SOLID STATE APPLICATIONS

Chair: ***Robert Blinc***

CONTRIBUTED LECTURES

11:25-11:42 **Ruediger Voelkel, Rudolf Berg, Samantha Champ,** *NMR Imaging of Swollen Superabsorbent Polymers.*

11:42-11:59 **Melanie M. Britton,** *Applications of NMR to the Study of Traveling Waves and Convection in Autocatalytic Reactions.*

11:59-12:16 **K. Kumagai, K. Kakuyanagi, M. Matsuda, and M. Hasegawa,** *Magnetic Field Induced Antiferromagnetic Order in the Vortex Core of HTSC Studied by Spatially-Resolved NMR.*

12:16-12:33 **Mladen Barbic, Axel Scherer,***Atomic Resolution Magnetic Resonance "Diffraction".*

THURSDAY, SEPT. 25 – AFTERNOON

12:33 - 1:50 PM LUNCH

1:50 - 3:31 PM SESSION XIV: BIOMEDICAL MAGNETIC RESONANCE II

Chair: ***R. Mark Henkelman***

A. Symposium on Non-Clinical Functional Magnetic Resonance

INVITED LECTURES

1:50-2:11 **Harold Swartz,** *Overview of the Use of Magnetic Resonance to Measure Function* In Viv

2:11-2:32 **Jeff Dunn,** *Physiological MRI (pMRI): Current Capabilities and Future Possibilities.*

2:32-2:53 **Robert Weisskoff,** *Molecular Imaging with MRI: Making Contrast the "Old Fashioned" Way.*

2:53-3:14 **Periannan Kuppusamy,** *Functional EPR Imaging: Tissue Redox Status & Oxygenation.*

B. Other Biomedical Applications

CONTRIBUTED LECTURE

3:14-3:31 **Philipp Mörchel, Volker Herold, Cornelius Faber, Eberhard Rommel, Axel Haase,** *High field In-Vivo Quantitative 3D Motion Mapping of Murine Myocardium with Phase Contrast MRI.*

3:31 – 3:55 PM COFFEE BREAK

3:55 - 6:18 PM SESSION XV: POROUS MEDIA

Chair: ***Peter J. McDonald***

INVITED LECTURES

3:55-4:40 **THE MR TECHNOLOGY LECTURE**
Paul T. Callaghan, *Rheo-NMR-Microscopy: Localizing the Physics of Soft Matter.*

4:40-5:10 **Yi-Qiao Song,** *Novel Techniques for Porous Media Research.*

CONTRIBUTED LECTURES

5:10-5:27 **R. W. Mair, R. Wang, M. S. Rosen, D. Candela, and R. L. Walsworth,** *NMR Studies of Xenon Gas Flow in Porous and Granular Media.*

5:27-5:44 **Jonathan Mitchell, Sue C. Stark, and John H. Strange,** *Modified Behaviour on a Nanoscopic Level of Materials Confined in Porous Systems.*

5:44-6:01 **Quan Chen, Murray K. Gringas, and Bruce J. Balcom,** *Pore Filling Mechanism of Spontaneous Imbibition in Porous Media Determined by Internal Field Effect and Conical-SPRITE MRI.*

6:01-6:18 **I.V. Koptyug, A.A. Lysova, A.V. Kulikov, V.A. Kirillov, V.N. Parmon, R.Z. Sagdeev,** *Magnetic Resonance Imaging and Spectroscopy of Catalytic Reactions*

6:18- 6:30 PM CLOSING SESSION

7:30 - ? BANQUET

(Winner of the Young Investigator's Competition will be announced during the banquet.)