Workshop on Low Field Magnetic Resonance

August 12-13, 2019
National Institute of Standards and Technology (NIST), Boulder, Colorado

Day 1 – August 12, 2019

7:30 **Breakfast**
Opportunity to upload presentations

8:30 **Opening**
Karl Stupic, National Institute of Standards and Technology

8:45 **Welcome**
Walter Copan, Under Secretary of Commerce for Standards and Technology, Director of National Institute of Standards and Technology

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9:00 **Unusual applications of NMR**
Eiichi Fukushima, ABQMR

9:30 **Session A: "So, where are we at?": Current State of Low Field MR**
Moderator: Scott Hinks, GE Healthcare
Artificial Intelligence Image Reconstruction for Low-field MRI
Neha Koonjoo, Athinoula A. Martinos Center for Biomedical Imaging
Clinically Feasible Magnetic Resonance Fingerprinting at Low Field Strengths
Mark Griswold, Case Western Reserve University
MRI at Low Field in the Inhomogeneous Magnetic Field
Boguslaw Tomanek, University of Alberta
Low field EPR: CW, Pulse, or Rapid Scan?
Gareth R. Eaton, University of Denver
Sandra S. Eaton, University of Denver

10:50 **Break**

11:00 **Session B: "What do I need to make this work?": Hardware for Low Field MR**
Moderator: Joshua Biller, TDA Research
Human-scale Fast Field-Cycling MRI at the University of Aberdeen
David Lurie, University of Aberdeen
B0 magnets based on permanent magnet arrays for portable, low-cost, and low-field brain MRI
Patrick McDaniel, Athinoula A. Martinos Center for Biomedical Imaging
The Recent research progress of a low-field permanent-magnet-based MRI Head Imager in Singapore University of Technology and Design
Shaoying Huang, Singapore University of Technology and Design
Low-Field MRI Lab at VUIIS
William Grissom, Vanderbilt University

Noon	**Lunch**
13:30	**Session C: "What can you accomplish with just one side?": Single Sided Low Field MR** **Moderator:** Clarissa Cooley, Athinoula A. Martinos Center for Biomedical Imaging **The Three Magnet Array for Single Sided Magnet Magnetic Resonance** Bruce Balcom, University of New Brunswick **RF Coil and Signal Processing Improvements for Unilateral NMR** Daniel Gruber, University of California, Davis Sophia Fricke, University of California, Davis **Relax Locally: Leveraging field gradients to improve data acquisition and probe spatially heterogeneous chemical processes** Tyler Meldrum, William and Mary **Fluid volume status monitoring via portable, single-sided magnet resonance** Christopher Frangieh, Massachusetts Institute of Technology
14:50	**Break**
14:15	**Session D: "Bringing the magnet to the people": Low Field MR for Point of Care** **Moderator:** Michelle Macpherson, Synaptive Medical **Compositional Imaging of the Breast and Mammographic Density Assessment Using Portable Single-Sided NMR** Konstantin Momot, Queensland University of Technology **Compact NMR for Metabolic Health Screening and Diabetes Prevention** David Cistola, Texas Tech University Health Sciences Center **The Potential for Diagnostic Cardiovascular MR at Low Field** Orlando Simonetti, The Ohio State University **Low-field MRI as a diagnostic tool for the treatment of hydrocephalus in Africa** Joshua Harper, Pennsylvania State University **Office based MRI for prostate imaging: a healthcare economics perspective** Dinesh Kumar, Promaxo
16:50	**Day 1 Wrap Up**
17:30	**Day 1 End** **Unofficial Dinner: Martin Park @ 18:00, details at workshop**

Day 2 – August 13, 2019

7:00 **Breakfast**
Opportunity to upload presentations

8:15 **Day 1 Recap**

8:30 **Session E: "Low field in the wild: neophyte to veteran": Low Field MR in Industrial Settings**
Moderator: Michael Janicke, Los Alamos National Laboratory
The rise of NMR well-logging and new challenges
Yi-Qiao Song, Schlumberger-Doll Research Center
Cores, Cuttings, and Logs: NMR in the oil and gas industry
Stacey Althaus, Aramco Research Center
Lo and Behold Field
Thomas Cull, ViewRay
Back to the Future: Clinical Challenges for Low Field MRI
Samantha By, Hyperfine

9:50 **Break**

10:00 **Session F: "Thinking outside of the 1H box": Non-proton isotopes in Low Field MR**
Moderator: Matthew Rosen, Athinoula A. Martinos Center for Biomedical Imaging
SABRE Hyperpolarization of X-nuclei for low-field biomedical MRI and high-precision low-field NMR
Thomas Theis, North Carolina State University
Long-lived hyperpolarized spin state enabled by low magnetic fields
Eduard Chekmenev, Wayne State University
Electron Paramagnetic Resonance Oxygen Imaging. Theory, Instrumentation and Applications.
Boris Epel, O2M Technologies
Targeted Relaxation for Nuclear Quadrupole Resonance Imaging
Michael Malone, Los Alamos National Laboratory

11:20 **Lunch**

13:00 **High-Performance Low-Field MRI**
Krishna Nayak, University of Southern California

13:30	**Session G: "The game is afoot!": Applications of Low Field MR** **Moderator:** Brian Welch, Hyperfine **Fast Field Cycling NMR Relaxometry Studies of Novel Ionic Liquid Based Lithium Battery Electrolytes** Steven Greenbaum, Hunter College at CUNY **Low Field MRI for Agriculture** Karl Stupic, National Institute of Standards and Technology Michele Martin, National Institute of Standards and Technology **MRI at 0.5T – The Synaptive Perspective** Alex Panther, Synaptive Medical **Opportunities in clinical imaging using high-performance low field MRI** Adrienne Campbell-Washburn, National Institutes of Health **Earth's Field NMR and small molecule spectroscopy. The magnet is giant, cheap, but really low field** Michael Janicke, Los Alamos National Laboratory
15:10	**Day 2 Wrap Up**
15:45	**Day 2 End** **NIST Tours available for those interested**