



**39<sup>th</sup> INTERNATIONAL EPR SYMPOSIUM  
JULY 17-21, 2016  
BRECKENRIDGE, COLORADO, USA**

**EPR SYMPOSIUM COMMITTEE**

John Morton (Chair)  
John McCracken (Co-Chair 2016, Chair 2017)  
Ania Bleszynski-Jayich  
Christoph Boehme  
Howard Halpern  
Fraser MacMillan  
Stefan Stoll  
Susumu Takahashi

**AGENDA**

**SUNDAY, JULY 17, 2016**

<b>Pre-Conference Activities</b>	
3:30-5:30 PM	<b>Get Into Shape Workshop (Pulse Shaping).</b> Songi Han (University of California Santa Barbara), Gareth Eaton (University of Denver), Laura Buchanan (University of Denver), Ralph Weber (Bruker BioSpin)
6:30-10:00 PM	<b>Bruker EPR Users' Meeting</b> <i>Meeting followed by Mixer</i>

MONDAY, JULY 18, 2016

8:10 AM	<b>Welcoming Remarks.</b> John Morton, EPR Symposium Chair
<b>Session I: Materials I.</b> Christoph Boehme, Chair	
8:15 AM	<b>Time-dependent Photo-EPR Applied to Point Defects in Crystals: Limitations and Applications.</b> Mary Ellen Zvanut, University of Alabama Birmingham
8:45 AM	<b>Suppressing Spin-spin Relaxation in Silicon Carbide with Natural Isotope Abundance using Dynamic Decoupling.</b> Andreas Sperlich, University of Würzburg
9:00 AM	<b>Silicon Carbide Magneto-resistive Magnetometer with Electrically Detected Magnetic Resonance Self-calibration Feature for Space Science Application.</b> Corey Cochrane, California Institute of Technology, Jet Propulsion Laboratory
9:15 AM	<b>Measurement of Paramagnetic Spin Concentration in a Solid-state System using Double Electron-electron Resonance.</b> Viktor Stepanov, University of Southern California
9:30 AM	<b>Hyperfine Interactions in Silicon.</b> Chandrasekhar Ramanathan, Dartmouth College
10:00 AM	<i>Break</i>
<b>Session II: Materials II.</b> Christoph Boehme, Chair	
10:40 AM	<b>Probing Giant Magnetic Anisotropies in Mononuclear Single-molecule Magnets.</b> Stephen Hill, National High Magnetic Field Laboratory and Florida State University
10:55 AM	<b>Triplet Exciton Generation in Materials for Organic Solar Cells.</b> Jan Behrends, Freie Universität Berlin
11:10 AM	<b>Spin-orbit Coupling in Conjugated Polymers.</b> Hans Malissa, University of Utah
11:25 AM	<b>Effect of Spin-orbit Interaction and Topological Gap for ESR Spectra in Low-dimensional Organic Conductors.</b> Toshikazu Nakamura, Institute for Molecular Science
11:40 AM	<b>Spin Dynamics of TAPD-MP<sub>Ar</sub>-C<sub>60</sub> Spin Correlated Radical Pair.</b> Naitik Panjwani, University College London
12:00 PM	<i>Lunch (included with registration)</i>
<b>Session III: Spin Centers in Biology and Chemistry I.</b> Fraser MacMillan, Chair	
1:30 PM	<b>Structural Information from Hyperfine Couplings in Iron Catalysts.</b> Inés Garcia-Rubio, Centro Universitario de la Defensa
2:00 PM	<b>263 GHz Pulse EPR Reports on Proton-coupled Electron Transfer Through the Subunit Interface of <i>E. Coli</i> Ribonucleotide Reductase Ia.</b> Thomas Nick, Max Planck Institute for Biophysical Chemistry
2:15 PM	<b>The Composition and Structure of the Inorganic Core of Intermediate X(WT) and X(Y1212F) of <i>E. coli</i> Ribonucleotide Reductase.</b> Peter Doan, Northwestern University
2:30 PM	<b>Mechanistic Investigations on Electron Bifurcation by EPR Spectroscopy.</b> David Mulder, National Renewable Energy Laboratory
2:45 PM	<b>Out-of-phase ESEEM: Measuring Distances of Excited Radical-pair States to Identify the Final Electron Donor in Cryptochromes and Photolyases.</b> Daniel Nohr, Albert-Ludwigs-University Freiburg
3:00 PM	<i>Break</i>
<b>Session IV: Spin Centers in Biology and Chemistry II.</b> Fraser MacMillan, Chair	
3:40 PM	<b>Studying the Structure of Metalloproteins with RIDME Spectroscopy: Application to Nitric Oxide Synthase.</b> Andre Astashkin, University of Arizona
4:10 PM	<b>EPR-active Molecular pH Probes at a Protein-Lipid Interface: Turning Electrical Charges On and Off.</b> Tatyana Smirnova, North Carolina State University
4:25 PM	<b>Free Energy Landscape and Protein Configurational Fluctuation Contributions to Radical Rearrangement Catalysis in B<sub>12</sub>-dependent Ethanolamine Ammonia-Lyase.</b> Meghan Kohne, Emory University
4:40 PM	<b>Utilizing Novel 95GHZ 2D-ESR Spectroscopy to Study Nitroxide Partitioning into the Lipid Membranes at Room Temperatures.</b> Siddarth Chandrasekaran, ACERT and Cornell University
4:55 PM	<b>Using EPR, ENDOR, and HYSORE to Elucidate the Structure of Copper and Cobalt Pre-Catalysts.</b> Elizabeth Papish, University of Alabama
5:30-7:00 PM	<i>Conference Reception</i>
<b>Session V: Posters</b>	
7:30-9:00 PM	<b>Authors Present for Posters Labeled A</b>

<b>Session VI: Spin Devices I.</b> Ania Bleszynski-Jayich, Chair	
8:15 AM	<b>Nanowire-Based Magnetic Resonance Imaging and Spectroscopy.</b> Raffi Budakian, University of Waterloo
8:45 AM	<b>EPR Spectroscopy of using Nitrogen-vacancy Centers in Diamond.</b> Chathuranga Abeywardana, University of Southern California
9:00 AM	<b>Nanoliter Biological Electron Paramagnetic Resonance Spectroscopy on a Diamond Chip.</b> Ilja Fescenko, University of New Mexico
9:15 AM	<b>Improving Optical Collection Efficiency for Simultaneous Electrically and Optically Detected Magnetic Resonance on Thin Film Devices.</b> Douglas Baird, University of Utah
9:30 AM	<b>Toward Single Atom Qubits on a Surface: ESR in a Scanning Tunneling Microscope.</b> William Paul, IBM Research
10:00 AM	<i>Break</i>
<b>Session VII: Spin Devices II.</b> Ania Bleszynski-Jayich, Chair	
10:40 AM	<b>Spin Coherence and Spin Relaxation in Monolayer Semiconductors.</b> Scott Crooker, National High Magnetic Field Laboratory
11:10 AM	<b>Simultaneous Detection of Transient Electrically Detected and Transient Magnetic Resonance Signals from Organic Solar Cells.</b> Felix Kraffert, Free University of Berlin
11:25 AM	<b>Separation of Hyperfine and Spin-Orbit Interactions in Organic Semiconductors by Multi-Frequency Electrically Detected Magnetic Resonance using Coplanar Waveguide Microresonators.</b> Gajadhar Joshi, University of Utah
11:40 AM	<b>Estimation of Spin Diffusion Length and Spin-Orbit Coupling Strength in Organic Semiconductors by Means of pulsed Inverse Spin-Hall Effect Measurements.</b> Marzieh Kavand, University of Utah
12:00 PM	<i>Lunch (included with registration)</i>
<b>Session VIII: Biological Macromolecules I.</b> Stefan Stoll, Chair	
1:30 PM	<b>Cu<sup>2+</sup>-ions as a ESR Probe of Protein Structure.</b> Sunil Saxena, University of Pittsburgh
2:00 PM	<b>Site-Specific Investigations of the Protein Dynamical Transition via Pulse EPR.</b> Ryan Barnes, University of California Santa Barbara
2:15 PM	<b>Bayesian Uncertainty Quantification For DEER Spectroscop.</b> Thomas Edwards, University of Washington
2:30 PM	<b>WavPDS: A Wavelet Approach in Denoising Pulsed Dipolar Spectroscopy.</b> Madhur Srivastava, Cornell University
2:45 PM	<b>Three Homologous TonB-dependent Transporters Utilize Different Mechanisms to Regulate Protein-Protein Interactions.</b> Lishan Liu, University of Virginia
3:00 PM	<i>Break</i>
<b>Session IX: Biological Macromolecules II.</b> Stefan Stoll, Chair	
3:30 PM	<b>Measuring Oxidation States in Exchange-Coupled Metal Clusters Using Ligand Hyperfine.</b> Troy Stich, University of California Davis
4:00 PM	<b>Optimization of Pulsed EPR Distance Measurements for Tau Protein Aggregation.</b> Timothy Keller, University of California Santa Barbara
4:15 PM	<b>Conformational Transitions of Maltose Binding Protein in the Native State and as Molten Globule at pH 3 as Monitored by DEER and DQC EPR Spectroscopy.</b> Wolfgang Trommer, TU Kaiserslautern
4:30 PM	<b>Selective Membrane Disruption Mechanism of an Antibacterial <math>\gamma</math>-AApeptide Defined by EPR Spectroscopy.</b> Likai Song, National High Magnetic Field Laboratory and Florida State University
4:45 PM	<b>Distance Measurements Between Paramagnetic Ligands Bound to Parallel Stranded Guanine Quadruplexes.</b> Matthew Donohue, National Institute of Standards and Technology
5:00 PM	<b>Phenylalanine Hydroxylase: Providing Details of a Catalytic Cycle with EPR Spectroscopy.</b> John McCracken, Michigan State University
<b>Session X: Posters</b>	
7:30-9:00 PM	<b>Authors Present for Posters Labeled B</b>

<b>Session XI: Integrated Magnetic Resonance I. (Joint Session - EPR &amp; SSNMR)</b> Sophia Hayes & John Morton, Chairs	
8:15 AM	<b>Towards Spin-assisted Long-term Data Storage in Diamond.</b> Carlos Meriles, CUNY - City College of New York
8:45 AM	<b>Electron Spectral Diffusion Measured via ELDOR for DNP at 7 T.</b> Alisa Leavesley, University of California Santa Barbara
9:00 AM	<b>Hypersensitivity with Dynamic Nuclear Polarization: Natural Isotopic Abundance and Closed-loop Cryogenic Helium Sample Spinning.</b> Gaël De Paëpe, INAC (CEA - Grenoble Alpes University)
9:30 AM	<b>Combining Dynamic Nuclear Polarization and Mechanically Detected Magnetic Resonance to Achieve Nanoscale Magnetic Resonance Imaging of Individual Biomolecules and Assemblies.</b> John Marohn, Cornell University
9:45 AM	<b>Electron Spin Decoupled NMR Driven by Electron Spin Relaxation of Spin Clusters.</b> Ting Ann Siaw, University of California Santa Barbara
10:00 AM	<i>Break</i>
<b>Session XII: Integrated Magnetic Resonance II. (Joint Session - EPR &amp; SSNMR)</b> Sophia Hayes & John Morton, Chairs	
10:40 AM	<b>Nanoscale NMR Detection and Imaging Using Nitrogen-vacancy Centers in Diamond.</b> Daniel Rugar, IBM Almaden Research Center
11:10 AM	<b>Technology for Hyperfine Decoupling and Time Domain DNP in Rotating Solids.</b> Alexander Barnes, Washington University in St. Louis
11:25 AM	<b>Nuclear Magnetic Resonance Spectroscopy on a Nanostructured Diamond Chip for Chemical Trace Analysis.</b> Nazanin Mosavin, CHTM-UNM
11:40 AM	<b>Gd<sup>3+</sup> as Polarizing Agent at High Field: Solid Effect vs Cross Effect Dynamic Nuclear Polarization.</b> Monu Kaushik, Goethe University Frankfurt
12:00 PM	<i>Lunch (included with registration)</i>
<b>Session XIII: Methods I.</b> Susumu Takahashi, Chair	
1:30 PM	<b>Quantum-Enhanced Nuclear Spin Imaging by an Electronic Spin Probe in Diamond.</b> Paola Cappellaro, Massachusetts Institute of Technology
2:00 PM	<b>Broadband Arbitrary Shaped Pulses for Pulsed EPR at 200GHz.</b> Ilia Kaminker, University of California Santa Barbara
2:15 PM	<b>Pushing SIFTER Towards New Application.</b> Philipp Schöps, Goethe University Frankfurt
2:30 PM	<b>Frequency Swept Rapid Scan EDMR.</b> Duane McCrory, National Institute of Standards and Technology
2:45 PM	<b>A Rapid Scan Method to Measure T<sub>1</sub> Relaxation Times.</b> Laura Buchanan, University of Denver
3:00 PM	<i>Break</i>
<b>Session XIV: Methods II.</b> Susumu Takahashi, Chair	
3:40 PM	<b>EPR Spectroscopy at the Quantum Limit.</b> Patrice Bertet, CEA Saclay
4:10 PM	<b>Pulsed ENDOR with On-Chip Superconducting Resonators.</b> Anthony Sigillito, Princeton University
4:25 PM	<b>Millikelvin ESR With Superconducting Resonators at Magnetic Fields up to 170 mT.</b> Christoph Zollitsch, London Centre for Nanotechnology
4:40 PM	<b>Using CMOS Voltage-controlled Oscillators for Ultra-fast Rapid Scan ESR Experiments.</b> Jens Anders, University of Ulm
<b>Session XV: IES Awards.</b> Alex Smirnov, Chair	
5:00 PM	<b>Coherent Pump Pulses in Double Electron Electron Resonance Spectroscopy.</b> Claudia Tait, University of Washington
5:20 PM	<b>Pulsed Electrically Detected Magnetic Resonance.</b> Christoph Boehme, University of Utah
<b>RMC General Business Meeting</b>	
5:40 PM	John Morton, Chair
7:00-9:00 PM	<i>Conference Banquet &amp; Awards Ceremony (Enjoy an evening of comradeship, fine food and recognition of peers. Pre-registration required.)</i>
7:55 PM	<b>Welcoming Remarks.</b> Kurt Zilm, Conference Chair
8:00 PM	<b>Half Century of Unconventional Paths in Magnetic Resonance: Rear View Mirror of a Former Solid-State NMR'er.</b> Eiichi Fukushima, New Mexico Resonance
8:30 PM	EPR Awards
8:40 PM	SSNMR Awards

<b>Session XVI: EPR Imaging / In-Vivo I.</b> Howard Halpern, Chair	
8:15 AM	<b>Precise Delivery of Radiation Treatment to Hypoxic Areas Based on EPR Oxygen Images.</b> Boris Epel, University of Chicago
8:45 AM	<b>Interstitial Inorganic Phosphate as an EPR Marker of Tumor Microenvironment and its Role in Tumorigenesis, Tumor Progression and Aggressiveness.</b> Valery Khramtsov, West Virginia University
9:00 AM	<b>Initial Results of Phase 1 Clinical Trial of OxyChip, an Implantable Probe for EPR Oximetry.</b> Periannan Kuppusamy, Dartmouth College
9:30 AM	<b>Feasibility Study of a CW-EPR-based Oxygen-mapping Technique Using a Pair of Isotopic Nitroxyl Radicals.</b> Hiroshi Hirata, Hokkaido University
9:45 AM	<b>Molecular Probes for Monitoring Thiol Redox Status <i>In Vivo</i>.</b> Joe Kao, University of Maryland
10:15 AM	<i>Break</i>
<b>Session XVII: Methods III.</b> Susumu Takahashi, Chair	
10:45 AM	<b>Tracking Field Fluctuations in Pulsed EPR.</b> Abraham Asfaw, Princeton University
11:00 AM	<b>Demagnetization Shifts in Very High Frequency Pulsed Electron Paramagnetic Resonance.</b> Blake Wilson, University of California Santa Barbara
11:15 AM	<b>Frequency-Domain EPR up to Several THz: Direct Observation of Large ZFS in Co<sup>II</sup> Clusters.</b> Joscha Nehr Korn, University of Washington
11:30 AM	<b>Multi-Extreme THz ESR: Development of Micro-Cantilever ESR up to the THz Region.</b> Hitoshi Ohta, Kobe University
11:45 AM	<b>High Sensitivity Transmission Mode Non-Resonant Stopped-Flow ESR.</b> Pragma Shrestha, National Institute of Standards and Technology
12:00 PM	<b>Closing Remarks.</b> John Morton, EPR Symposium Chair