



# CINT Annual Meeting

September 25-27, 2017

La Fonda Plaza Hotel, Santa Fe, New Mexico

sponsored in part by



Joint NSRC Workshop on Soft Matter

September 25-27, 2017

## Monday Morning, September 25

7:30 am	<b>Registration</b> <b>Continental Breakfast Available</b>	<b>Mezzanine</b> <b>Ballroom North</b>
9:00 am	<b>Plenary Session</b>	<b>Ballroom South</b>
	<b>Welcome</b> <i>Mary Hockaday, Associate Director, Los Alamos National Laboratory</i>	
9:10 am	<b>Introductions and CINT Update</b> <i>Andreas Roelofs, CINT Director &amp; Sean Hearne, CINT Co-Director</i>	
9:25 am	<b>Sankar Das Sarma</b> University of Maryland <i>"Majorana Nanowires: Perspective and Prognosis"</i>	<b>Ballroom South</b>
10:05 am	<b>Break</b>	<b>Ballroom North</b>
10:20 am	<b>Thomas La Grange</b> École Polytechnique Fédérale de Lausanne <i>"Status of Ultrafast and High-speed TEM Technology and Perspectives for Improving the Resolution of These Techniques"</i>	<b>Ballroom South</b>
11:00 am	<b>M. Cristina Marchetti</b> Syracuse University <i>"Self-organization of active matter"</i>	<b>Ballroom South</b>
11:40 am	<b>Informal poster viewing</b>	<b>La Terraza Terrace</b>
12:00 pm	<b>Lunch</b>	<b>Ballroom North</b>
12:00 pm	<b>User Executive Committee Lunch (closed)</b>	<b>Stiha Room</b>

**Monday afternoon, September 25**

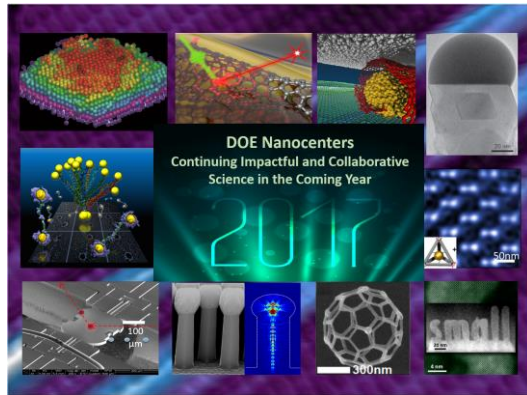
**2017 CINT Annual Meeting - Parallel Symposia**

**Joint NSRC Workshop on Soft Matter – See separate agenda  
New Mexico Room**

Symposia	Emergent Phenomena in Quantum Materials  Ballroom South	Exploring New Frontiers in Chemistry and Physics with Electron Microscopy  Stiha Room
	<b>Moderators:</b> <i>Mike Lilly / Han Htoon / Rohit Prasankumar / Jianxin Zhu</i>	<b>Moderators:</b> <i>Katherine Jungjohann / Khalid Hattar / Nathan Mara</i>
<b>1:00 pm</b>	<b>Zahid Hasan</b> <i>Princeton University</i> <i>“Theoretical and experimental discovery of topological Weyl, nodal-line and chiral anomaly materials and the new frontiers”</i>	<b>Rosa Diaz</b> <i>Purdue University</i> <i>“Environmental Transmission Electron Microscopy in the gas/solid interface - advances and limitations”</i>
<b>1:30 pm</b>	<b>Wei Pan</b> <i>Sandia National Laboratories</i> <i>“Quantum Transport Studies in Dirac Semimetal Cd3As2”</i>	<b>Abhaya Datye</b> <i>University of New Mexico</i> <i>“Environmental TEM for the design of heterogeneous catalysts for sustainable energy production”</i>
<b>2:00 pm</b>	<b>Xiangfeng Duan</b> <i>University of California, Los Angeles</i> <i>“2D materials, heterostructures and devices”</i>	<b>Arturo Ponce</b> <i>The University of Texas at San Antonio</i> <i>“In-situ heating/magnetization off-axis electron holography to study magnetocrystalline anisotropy in materials at nanoscale”</i>
<b>2:30 pm</b>	<b>Feng Wang</b> <i>University of California, Berkeley</i> <i>“Probing Valley Dynamics in Van der Waals Heterostructures”</i>	<b>Renjie Chen</b> <i>University of California San Diego</i> <i>“Recording and Analysis of the Atomic Scale Dynamics of Contact Formation in the Cross-Section and Along InGaAs Nanowire Channels”</i>
<b>3:00 pm</b>	<b>Break</b>	<b>Break</b>
<b>3:30 pm</b>	<b>Frank Hegmann</b> <i>University of Alberta</i> <i>“Ultrafast terahertz scanning tunneling microscopy”</i>	<b>Joe Michael</b> <i>Sandia National Laboratories</i> <i>“State-of-the-art in Focused Ion Beam Techniques and Future Prospects”</i>
<b>4:00 pm</b>	<b>Dmitry Yarotski</b> <i>The Center for Integrated Nanotechnologies</i> <i>“Probing and Manipulating Quantum Materials with Terahertz Pulses”</i>	<b>Mike Chandross</b> <i>Sandia National Laboratories</i> <i>“Predicting Friction in Metals: Bridging the Gap from Nano to Macro”</i>
<b>4:30 pm</b>	<b>Jianxin Zhu</b> <i>The Center for Integrated Nanotechnologies</i> <i>“Normal-State Electronic Structure of the Bi-Pd family of Topological Superconductors”</i>	<b>Suneel Kodambaka</b> <i>University of California Los Angeles</i> <i>“In Situ Microscopy Studies of III-V Nanowire Evaporation and Transition-Metal Carbide Nanomechanics”</i>
<b>5:00pm – 7:00pm</b>	<b>Poster Session sponsored by:</b>   <span style="float: right;"><i>La Terraza Terrace</i></span>	
	<b>2 Drink tickets per attendee provided courtesy of ThermoFisher Scientific and Princeton Instruments. (Please see reception desk for your tickets)</b>	

**Tuesday Morning, September 26**

7:30 am	<b>Registration</b> <b>Continental Breakfast available</b> <b>Ballroom North</b>		<b>Mezzanine</b>
8:30 am	<b>Users Executive Committee Town Hall Meeting (All Welcome)</b> <ul style="list-style-type: none"> <li>○ <b>Don Lucca</b>, Chair, Users Executive Committee</li> <li>○ <b>Heather Brown</b>, User Program Manager</li> <li>○ <b>Andreas Roelofs</b>, CINT Director &amp; <b>Sean Hearne</b>, CINT Co-director</li> </ul>		<b>Ballroom North</b>
<b>Joint NSRC Workshop on Soft Matter – See separate agenda</b> <b>New Mexico Room</b>			
Symposia	<b>Emergent Phenomena in Quantum Materials</b>  <b>Ballroom South</b>	<b>Exploring New Frontiers in Chemistry and Physics with Electron Microscopy</b>  <b>Stiha Room</b>	
	<b>Moderators:</b> Mike Lilly / Han Htoon / Rohit Prasankumar / Jianxin Zhu	<b>Moderators:</b> Katherine Jungjohann / Khalid Hattar / Nathan Mara	
9:00 am	<b>Ryan Jock</b> Sandia National Laboratories <i>“Interface Spin-Orbit Coupling in a Silicon MOS Singlet-Triplet Qubit”</i>	<b>Steven Hayden</b> ARAMCO Services Company <i>“Steel corrosion at the nanoscale”</i>	
9:30 am	<b>Milos Toth</b> University of Technology Sydney <i>“Single photon emission from defects in hexagonal boron nitride and gallium nitride”</i>	<b>Eric Schindelholz</b> Sandia National Laboratories <i>“Understanding Pitting and Stress Corrosion Cracking of Austenitic Stainless Steels”</i>	
10:00 am	<b>Stephen Doorn</b> The Center for Integrated Nanotechnologies <i>“Quantum Emission Behavior of Carbon Nanotube Defect States”</i>	<b>Josh Kacher</b> Georgia Tech University <i>“Investigating localized corrosion events by in-situ TEM liquid cell experiments”</i>	
10:30 am	<b>Break</b>	<b>Break</b>	
11:00 am	<b>Ed Bielejec</b> Sandia National Laboratories <i>“Fabrication of Single Atom Devices by Direct Write Nanofabrication”</i>	<b>Jim Ciston</b> Lawrence Berkeley National Laboratory <i>“Every electron counts: New opportunities in electron microscopy enabled by fast pixelated detectors”</i>	
11:30 am	<b>Concluding Remarks by Symposium Organizer</b> ****End of Symposium***	<b>Nik Chawla</b> Arizona State University <i>“Nanolaminates: Layered Metal-Ceramic Composites at the Nanoscale”</i>	
11:30 am		<b>Joe McKeown</b> Lawrence Livermore National Lab <i>“Dynamic transmission electron microscopy studies of rapid alloy solidification”</i>	
12:00 am	<b>Lunch</b>		<b>Ballroom North</b>



# Joint NSRC Workshop on Soft Matter

*September 25-27, 2017*

**La Fonda Plaza Hotel, Santa Fe, New Mexico**

**Organizing Committee:**

<b>Gary S. Grest</b>	Sandia National Laboratories, <i>Center for Integrated Nanotechnologies</i>
<b>George Bachand</b>	Sandia National Laboratories, <i>Center for Integrated Nanotechnologies</i>
<b>Xiao-Min Lin</b>	Argonne National Laboratory, <i>Center for Nanoscale Materials</i>
<b>Oleg Gang</b>	Brookhaven National Laboratory, <i>Center for Functional Nanomaterials</i>
<b>Ron Zuckermann</b>	Lawrence Berkeley National Laboratory, <i>The Molecular Foundry</i>
<b>Bobby Sumpter</b>	Oak Ridge National Laboratory, <i>Center for Nanophase Materials Sciences</i>

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<b>11:40 am</b>	<b>Informal poster viewing</b>	<b>La Terraza Terrace</b>
<b>12:00 pm</b>	<b>Lunch</b>	<b>Ballroom North</b>

**Monday Afternoon, September 25**

<b>12:00 pm</b>	<b>Lunch</b>	<b>Ballroom North</b>
	<b>Joint NSRC Workshop on Soft Matter New Mexico Room</b>	
	<b>Moderators:</b> <i>George Bachand and Ron Zuckermann</i>	<b>New Mexico Room</b>
<b>1:15pm</b>	<b>Oleg Gang</b> <i>Brookhaven National Laboratory, Center for Functional Nanomaterials</i> <i>"Programmable Assembly at Nanoscale: From Principles to Material Design"</i>	
<b>1:40 pm</b>	<b>Steve Whitelam</b> <i>Lawrence Berkeley National Laboratory, The Molecular Foundry</i> <i>"Toward synthesis by design of two-dimensional networks, in and out of equilibrium"</i>	
<b>2:05 pm</b>	<b>Alexei Tkachenko</b> <i>Brookhaven National Laboratory, Center for Functional Nanomaterials</i> <i>"Tales of emerging complexity: from self-assembly to evolution"</i>	
<b>2:30 pm</b>	<b>Gang Ren</b> <i>Lawrence Berkeley National Laboratory, The Molecular Foundry</i> <i>"Characterization of DNA origami structure and dynamics by electron tomography"</i>	
<b>2:55 pm</b>	<b>Mircea Cotlet</b> <i>Brookhaven National Laboratory, Center for Functional Nanomaterials</i> <i>"DNA-based plasmonic quantum dots with regulated optical output"</i>	
<b>3:20 pm</b>	<b>Break</b>	<b>Ballroom North</b>
<b>3:50 pm</b>	<b>Dmytro Nykypanchuk</b> <i>Brookhaven National Laboratory, Center for Functional Nanomaterials</i> <i>"Responsive DNA/nanoparticle structures"</i>	
<b>4:15 pm</b>	<b>Jennifer Martinez</b> <i>Los Alamos National Laboratory, Center for Integrated Nanotechnologies</i> <i>"Assembly of DNA Nanoclusters: Catalysis and Photophysics"</i>	
<b>5:00pm - 7:00pm</b>	<b>Poster Session sponsored by:</b>   <i>2 Drink tickets per attendee provided courtesy of ThermoFisher Scientific and Princeton Instruments. (Please see reception desk for your tickets)</i>	<b>La Terraza Terrace</b>

**Tuesday Morning, September 26**

<b>7:30 am</b>	<b>Continental Breakfast available</b>	<b>Ballroom North</b>
	<b>Joint NSRC Workshop on Soft Matter New Mexico Room</b>	
	<b>Moderators:</b> <i>Gary S. Grest and Bobby Sumpter</i>	<b>New Mexico Room</b>
<b>8:30 am</b>	<b>Gregory Doerk</b> <i>Brookhaven National Laboratory, Center for Functional Nanomaterials</i> <i>"Diversifying the Nanostructure Landscape in Diblock Copolymer Self-Assembly"</i>	
<b>8:55 am</b>	<b>Brad Lokitz</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"Probing the Electromechanical Response of Ionic Block Copolymers using Neutron Reflectometry"</i>	
<b>9:20 am</b>	<b>Amalie Frischknecht</b> <i>Sandia National Laboratories, Center for Integrated Nanotechnologies</i> <i>"Simulations of Morphology and Dynamics in Ion-Containing Polymers"</i>	
<b>9:45 am</b>	<b>Rajeev Kumar</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"Thermodynamics of polar polymer brushes and solutions: field theory based approaches"</i>	
<b>10:10 am</b>	<b>Break</b>	
<b>10:40 am</b>	<b>Yangyang Wang</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"A new paradigm for molecular rheology of polymers: Bridging experiment, theory, and simulation via the spatially-dependent structural response function approach"</i>	
<b>11:05 am</b>	<b>Mark Stevens</b> <i>Sandia National Laboratories, Center for Integrated Nanotechnologies</i> <i>"Understanding structure of polyelectrolytes through simulation and single molecule force measurements"</i>	
<b>11:30 am</b>	<b>Kunlun Hong</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"Controlled Synthesis and Selective Deuteration: A Powerful Combination in Soft Matter Science"</i>	
<b>11:55 am</b>	<b>Lunch</b>	<b>Ballroom North</b>

**Tuesday Afternoon, September 26**

<b>Joint NSRC Workshop on Soft Matter New Mexico Room</b>	
	<b>Moderators:</b> <i>Oleg Gang and Mark Stevens</i> <span style="float: right;"><b>New Mexico Room</b></span>
<b>1:30 pm</b>	<b>Elena Shevchenko</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Surface modification for compositional and property control of nanoparticles"</i>
<b>1:55 pm</b>	<b>Dale Huber</b> <i>Sandia National Laboratories, Center for Integrated Nanotechnologies</i> <i>"Novel Approaches to Nanoparticle Size Control"</i>
<b>2:20 pm</b>	<b>Dvora Perahia</b> <i>Clemson University</i> <i>"Polydots: Soft Luminescent Nanoparticles"</i>
<b>2:45 pm</b>	<b>Tijana Rajh</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Powering TiO<sub>2</sub> nanoparticles in living systems"</i>
<b>3:10 pm</b>	<b>Break</b> <span style="float: right;"><b>Ballroom North</b></span>
<b>3:40 pm</b>	<b>Xiao-Min Lin</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Microstructure and Dynamics in Shear Thickening Fluids probed by Rheo-SAXS-XPCS"</i>
<b>4:05 pm</b>	<b>Jan-Michael Carrillo</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"Molecular Dynamics Simulations of the Diffusion of Small and Sticky Nanoparticles in Polymer Nanocomposites"</i>
<b>4:30 pm</b>	<b>Subramanian Sankaranarayanan</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Machine learnt models for soft-matter simulations"</i>
<b>4:55 pm</b>	<b>Yi Liu</b> <i>Lawrence Berkeley National Laboratory, The Molecular Foundry</i> <i>"Tuning Structure and Ordering in Frameworks of Functional <math>\pi</math>-Systems"</i>
<b>5:20 pm</b>	<b>Dinner on your own</b>



**Wednesday Morning, September 27**

<b>7:30 am</b>	<b>Continental Breakfast available</b>	<b>Ballroom North</b>
	<b>Joint NSRC Workshop on Soft Matter New Mexico Room</b>	
	<b>Moderators:</b> <i>Xiao-Min Lin and Steve Whitelam</i>	<b>New Mexico Room</b>
<b>8:30 am</b>	<b>H. Christopher Fry</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Controlling Metalloporphyrin Photophysical and Electronic Properties with Supramolecular Peptide Assemblies"</i>	
<b>8:55 am</b>	<b>Ron Zuckermann</b> <i>Lawrence Berkeley National Laboratory, The Molecular Foundry</i> <i>"Translating biological structure and function to non-natural sequence-defined peptoid polymers"</i>	
<b>9:20 am</b>	<b>Gabriel A. Montano</b> <i>University of Northern Arizona</i> <i>"Who needs a lipid? Amphiphilic block copolymers to create biomimetic membrane composites"</i>	
<b>9:45 am</b>	<b>Miguel Fuentes-Cabrera</b> <i>Oak Ridge National Laboratory, Center for Nanophase Materials Sciences</i> <i>"Microbes in and out: from the self-organization of organelles to the self-organization of microbial populations with predators and preys"</i>	
<b>10:10 am</b>	<b>Break</b>	<b>Ballroom North</b>
<b>10:40 am</b>	<b>Behzad Rad</b> <i>Lawrence Berkeley National Laboratory, The Molecular Foundry</i> <i>"Engineering Proteins that Create &amp; Communicate with Materials"</i>	
<b>11:05 am</b>	<b>Elena Rozhkova</b> <i>Argonne National Laboratory, Center for Nanoscale Materials</i> <i>"Cell-Free Synthetic Biology Chassis for Non-Covalent Bio-Nano Architectonics"</i>	
<b>11:30 am</b>	<b>Wally Paxton</b> <i>Sandia National Laboratories, Center for Integrated Nanotechnologies</i> <i>"Dynamic Membrane Materials from Amphiphilic Block Copolymers"</i>	
<b>11:55am - 12:00 noon</b>	<b>Concluding Remarks by Symposium Organizer</b> <b>****End of Symposium***</b>	