# MapNan19: Mapping Nanoscale Functionality with Scanning Probe Microscopy

**Berlin, Germany, 2019 November 4th - 5th**
Conference Chairs: Stefan Weber and Brian Rodriguez

## Conference Program

### November 4th - Day 2 (Monday)

#### Plenary Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>K1</td>
<td>Efrat Lifshitz (Schulich Faculty of Chemistry, Solid State Institute, Russell Berrie Nanotechnology Institute and the Helen Diller Quantum Information Center, Technion, Haifa, Israel), Maksym Kovalenko, Andrew Rappe. The Effect of Magnetism on the Optical Properties of Bulk and Confined Perovskite Structures.</td>
</tr>
<tr>
<td>09:00</td>
<td>K2</td>
<td>Daniel Nocera (Harvard University). Sustainable and Renewable Carbon and Nitrogen Cycles for Fuel and Crop Production.</td>
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**MapNan 1.1.**

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>09:30</td>
<td>I1</td>
<td>Yunseok Kim (Sungkyunkwan University (SKKU)). Fast Local Probing of Polarization Charge.</td>
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<tr>
<td>09:30</td>
<td>O1</td>
<td>Tobias Leonard (Light Technology Institute, Karlsruhe Institute of Technology, Germany), Holger Röhm, Alexander Schulz, Susanne Wagner, Michael J. Hoffmann, Alexander Colsmann. Ferroelectricity in methylammonium lead iodide perovskite solar cells.</td>
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**MapNan 1.2.**

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>10:00</td>
<td>I1</td>
<td>Liam Collins (Center for Nanophase Materials Sciences, Oak Ridge National Laboratory). Multiscale Functional mapping in Hybrid Organic Inorganic Perovskites: Linking Device Hysteresis with Local Functionality.</td>
</tr>
<tr>
<td>10:00</td>
<td>O1</td>
<td>Rajiv Giridharagopal (University of Washington, Department of Chemistry, Seattle, WA 98195-1700), David Ginger. Advances in Multimodal Scanning Probe Microscopy at the Nanoscale.</td>
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**MapNan 1.3.**

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
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<tbody>
<tr>
<td>11:00</td>
<td>I1</td>
<td>Mahshid Ahmadi. (Joint Institute for Advanced Materials, Department of Materials Science and Engineering, University of Tennessee), Liam Collins, Kate Higgins, Matthias Lorenz, Sergei V. Kalinin. Spatially Resolved Carrier Dynamics and Associated Chemical Changes at Hybrid Organic-inorganic Perovskite/Electrode Interfaces.</td>
</tr>
<tr>
<td>11:00</td>
<td>O1</td>
<td>Andrei Khokhlin (University of Aveiro), Denis Alikin, Boris Slaunin, Konstantin Romanyuk, Daniele Rosato, Alexander Tselev. Correlative Scanning Probe and Confocal Raman Microscopy for the Evaluation of Li-ion Kinetics in LiMn2O4 Cathodes.</td>
</tr>
</tbody>
</table>

**Lunch**

### November 5th - Day 3 (Tuesday)

#### Plenary Session

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>14:00</td>
<td>I1</td>
<td>Hiroaki BENTEN (Division of Materials Science, Nara Institute of Science and Technology - JP). Nanoscale Morphology for Charge Transport of Conjugated Polymer Blend Films Studied by Conductive Atomic Force Microscopy.</td>
</tr>
</tbody>
</table>
### Plenary Session

#### 08:30 - 09:00

**Juan Bisquert** *(1 Institute of Advanced Materials (INAM), Universitat Jaume I, Castellon, 12006 (Spain))*

Session-K1

Understanding Time Scales of Ionic and Electronic Phenomena in Perovskite Solar Cells

#### 08:30 - 09:00

**William Tisdale** *(Massachusetts Institute Of Technology)*

Session-K2

Nonequilibrium Dynamics of Excitons and Charges in Semiconductor Nanomaterials

### MapNan 2.1

#### 09:00 - 09:30

**Laura Fumagalli** *(National Graphene Institute, Manchester, UK)*

Probing the Dielectric Constant on the Nanoscale: from Thin Films to DNA and Confined Water

#### 09:30 - 10:00

**Riccardo Borgani** *(Nanostructure Physics, KTH Royal Institute of Technology, Stockholm, Sweden)*, David Haviland

Multifrequency AFM Methods for Electrical Characterization at the Nanoscale

#### 10:00 - 10:15

**Andrea Cerreta** *(Park Systems Europe GmbH)*, Florian Stumpf, Ilka Hermes, Manfred Madel, Linh Trinh-Xuan

Simultaneous SKPM and Current-Voltage Characterization of Slow Charging Processes in Transistors

#### 10:15 - 10:30

**Katie O'Neill** *(CRANN/AMBER, School of Physics, Trinity College Dublin, Ireland)*, Cormac Ó Coileáin, Jason Kilpatrick, Max Precht, Niall McEvoy, Georg S. Duesberg

Manipulation of Transition Metal Dichalcogenides: Nanomachining 2D PtSe2 using AFM

### MapNan Break

### MapNan 2.2

#### 11:00 - 11:30

**Lukas M. Eng** *(Institute of Applied Physics, TU Dresden)*

"SFM-mediated NanoMagnetism & NanoOptics: From Skyrmions to THz Near-field Optics"

#### 11:30 - 12:00

**Patrick Mesquida** *(Kings College London)*

Kevin-probe Force Microscopy of Biological Materials

#### 12:00 - 12:15

**Richard Thelen** *(Karlsruhe Institute of Technology (KIT), Institute of Microstructure Technology (IMT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany)*

Correlated Characterization: a Realistic Option For Future Metrology?

#### 12:15 - 12:30

**Miriam Unger** *(Bruker Nano Surfaces)*, Anirban Roy, Qichi Hu

Latest Advances in Nanoscale IR Spectroscopy and Imaging

### Lunch

### MapNan 2.3

#### 14:00 - 15:30

#### 15:30 - 16:00

**Coffee Break**

#### 17:00 - 19:00

**Poster Session**