

## PROGRAM

### MANA International Symposium 2021 Jointly with ICYS

2<sup>nd</sup> March – 3<sup>rd</sup> March, 2021

Live Venue: Auditorium, WPI-MANA bld. Namiki, NIMS, Tsukuba

#### Monday, March 1<sup>st</sup>

17:30 - 19:00      **Networking**

#### Tuesday, March 2<sup>nd</sup>

8:30 -              *Open*

#### **Opening**

Chair: Tomo Nakayama

9:00 - 9:12      *Greetings*                      Takayoshi SASAKI (Director, MANA, NIMS)

9:12 - 9:20      *Introduction and Orientation*      Tomo NAKAYAMA (Deputy Director, MANA, NIMS )

#### **Keynote Lecture 1**

Chair: Takayoshi Sasaki

9:20 – 9:50      *Nanoarchitectonics of Silicates*  
Kazuyuki KURODA (Professor, Waseda University, Japan)

#### **Session 1:**

9:50 – 10:15      *Managing Proton Gradients with Bipolar Membranes in CO<sub>2</sub> Electrolysis, Fuel Cells and Redox Flow Batteries*  
Thomas MALLOUK (Professor, MANA Satellite PI, University of Pennsylvania, USA)

10:15 - 10:40      *The Physics of Contact Electrification and the Theory of Triboelectric Nanogenerators*  
Zhong-Lin WANG (Professor, MANA Satellite PI, Georgia Institute of Technology, USA)

#### **5min Break**

Chair: Takao Mori

10:45 - 11:10      *Quantum-Oscillation Fermiology of Iron-Based Superconductor (Parent) Compounds*  
Taichi TERASHIMA (Group Leader, MANA, NIMS)

11:10 – 11:35      *Large-Scale DFT Calculations for Materials with Complicated Structures*  
Ayako NAKATA (MANA Scientist, MANA, NIMS)

11:35 – 12:00      *Development of High Performance Thermoelectric Materials by Using Magnetic Interaction*  
Naohito TSUJII (MANA Scientist, MANA, NIMS)

#### **12:00 - 16:00    On-demand Session\***

**-Topical Video Presentations**

**-Poster Video Presentation**

**-Virtual Tours**

## Keynote Lecture 2:

Chair: Tsuyoshi Miyazaki

16:00 – 16:30 *First-Principles Material Simulation and Beyond*  
Shinji TSUNEYUKI (Professor, The University of Tokyo, Japan)

## Session 2:

16:30 - 16:55 *The Bottom-Up Assembly of Anisotropic Nanocomposites. Exceeding the Strength of Trees, Anisotropic Titania Bandgaps and Precision Chirality Transfer*  
Gero DECHER (Professor, MANA Satellite PI, Strasbourg University, France)

16:55 – 17:20 *Large-Scale DFT Calculations: Recent Developments and Applications to Perovskites*  
David BOWLER (Professor, MANA Satellite PI, University College London, UK)

17:20 - 17:45 *Mechanobiological Control of Electron Flow via Transmembrane Electric Wire in Living Bacteria*  
Akihiro OKAMOTO (Independent Scientist, MANA, NIMS)

### 5min Break

Chair: Yutaka Wakayama

17:50 - 18:15 *Nanoscale Mechanics: from a Single Molecule-Gear to a Solid State Nanogear*  
Christian JOACHIM (Scientific Director, MANA Satellite PI, CEMES-CNRS Toulouse, France)

18:15- 18:40 *Azopyridine-Triggered Photoresponsive Polymers and Beyond: Toward Soft Robots"*  
Françoise WINNIK (Professor, MANA Satellite PI, University of Helsinki, Finland)

18:40 - 19:05 *Supramolecular Mechanics on Liquid*  
Katsuhiko ARIGA (MANA PI, MANA, NIMS)

### 5min Break

19:10 - 20:10 **Networking Time**

## Wednesday, March 3<sup>rd</sup>

## Keynote Lecture 3

Chair: Tomo Nakayama

9:00 - 9:30 *Atom-Defined Silicon Circuit Elements for Efficient, Fast Computing and New Functions*  
Robert WOLKOW (Professor, University of Alberta, Canada)

## Session 3:

9:30 – 9:55 *Brain on the Edge*  
James GIMZEWSKI (Professor, MANA Satellite PI, University of California, Los Angeles, USA)

9:55 - 10:20 *Impurity Control Under High Pressure Synthesis for Exploring New Functions of Diamond and Boron Nitride*  
Takashi TANIGUCHI (Fellow, MANA, NIMS)

10:20 - 10:45 *Materials and Devices for Wavelength-Selective Radiative Heat Convention*  
Tadaaki NAGAO (MANA PI, MANA, NIMS)

### 5min Break

Chair: Kazuya Terabe

10:50- 11:15 *Ionic Nanoarchitectonics for Information Storage, Neuromorphic and Decision Making Functionalities*  
Takashi TSUCHIYA (MANA Scientist, MANA, NIMS)

11:15 - 11:40 *STEM-Based Thermal Analytical Microcopy with Temperature Control System*  
Naoyuki KAWAMOTO (MANA Scientist, MANA, NIMS)

11:40 - 12:05 *Liquid Marble Patchwork on Super-Repellent Surface*  
Mizuki TENJIMBAYASHI (Independent Scientist, MANA, NIMS)

**12:05 - 16:30 On-demand Session\***

**-Topical Video Presentations**

**-Poster Video Presentation**

**-Virtual Tours**

**-Day 1 Symposium Videos\*\***

**Session 4:**

Chair: Koichi Tsuchiya

- 16:30 – 16:45 *Salt-Assisted Growth of 2D Transition Metal Dichalcogenides*  
Shisheng LI (ICYS Research Fellow, ICYS, NIMS)
- 16:45 – 17:00 *Direct Growth of Germanene at Interfaces between Van der Waals Materials and Ag (111)*  
Seiya SUZUKI (ICYS Research Fellow, ICYS, NIMS)
- 17:00 - 17:15 *Essential Structural and Experimental Descriptors for Solid-state Li-ion Conductors: Prediction of Bulk and Grain Boundary Ionic Conductivities by Machine Learning*  
Yen-Ju WU (ICYS Research Fellow, ICYS, NIMS)
- 17:15 - 17:30 *Nanoscale Singlet Oxygen Photosensitizers from Fuchsonarenes*  
Daniel T. PAYNE (ICYS Research Fellow, ICYS, NIMS)
- 17:30 - 17:45 *Magnetic Properties of Organic Dirac Fermion System*  
Takako KONOIKE (Independent Scientist, MANA, NIMS)

**5min Break**

Chair: Yutaka Wakayama

- 17:50 – 18:05 *Interface Engineering for the III-V Nitride Semiconductors*  
Liwen SANG (Independent Scientist, MANA, NIMS)
- 18:05 – 18:20 *Room-Temperature Synthesis of Synthetic 2D Polymers and Their Use for Water Purification*  
Michio MATSUMOTO (Independent Scientist, MANA, NIMS)
- 18:20 – 18:35 *Challenge to Mobile Machine Olfaction*  
Gaku IMAMURA (Independent Scientist, MANA, NIMS)
- 18:35 - 18:50 *Massive Fabrication of Macroporous Silicone Materials by a Simple Aqueous Process and Their Applications*  
Gen HAYASE (Independent Scientist, MANA, NIMS)
- 18:50 - 19:05 *Strong Carrier Localization in Defective Graphene Induced by Helium Ion Irradiation*  
Takuya IWASAKI (Independent Scientist, MANA, NIMS)

**Closing**

19:05 - Closing Tomo Nakayama (Deputy Director, MANA, NIMS)

**Poster Award: Poster Award Winners will be announced on the Symposium Website on March 5<sup>th</sup>**

\* On-demand Session will be available till March 7<sup>th</sup>

\*\* After March 4<sup>th</sup>, Day 2 Symposium Videos will be disclosed.