

**2018 Joint Symposium on Energy Materials Science and Technology
(Workshop of Pre-Strategic Initiatives)**

March 8-9, 2018

Venue: University of Tsukuba. Laboratory of Advanced Research B

March 8th, 2018 (Thursday) (Lecture Room 0110)

8:30~9:00 Registration

Opening Remarks

9:00~9:05 Tatsuya Nabeshima (TREMS, University of Tsukuba)

Scientific Session

Chairman: Tatsuya Nabeshima (TREMS, University of Tsukuba)

9:05~9:20 Junji Nakamura (TREMS, University of Tsukuba)

Catalytic Conversion of CO₂ to Methanol on Cu

9:20~9:50 Stefanie Tjaberings, Andrea Steinhaus, Tai-Lam Nghiem, André H. Gröschel
(CENIDE, University of Duisburg-Essen)

Block Copolymer Templates for Energy Applications

9:50~10:20 Eunji Lee, Huiyeong Ju, Shim Sung Lee (Gyeongsang National University,
Jinju, South Korea)

Calixcrowns versus Pillarcrowns: Old and New Ditopic Building Blocks in
Supramolecular Coordination Chemistry

10:20~10:35 **Coffee Break (Lecture Room)**

Chairman: Yohei Yamamoto (TREMS, University of Tsukuba)

10:35~10:50 Yasuhiko Yamamoto Tomokazu Shibata, Yusaku Nakayama Ryosuke
Shinomiya and Haruka Araki (TREMS, Department of Chemistry, TARA
Center, University of Tsukuba)

Characterization of Complexes between Heme and G-quadruplex DNAs

10:50~11:05 Seiya Tsujimura (TREMS, University of Tsukuba)

Enzymatic Biofuel Cells

- 11:05~11:35 Stefan Hecht (Humboldt University of Berlin)
Exploiting Photoswitches as Remote-Control in Materials and Devices
- 11:35~11:50 Susumu Okada (TREMS, University of Tsukuba)
Energetics and Electronic Structures of In-plane Heterostructure
- 11:50~13:10 **Poster Session and Lunch (Lecture Room)**
- Chairman: Eiji Nishibori (TREMS, University of Tsukuba)
- 13:10~13:25 Yutaka Moritomo (TREMS, University of Tsukuba)
Thermal Power Generation in Heat Cycle near Room Temperature
- 13:25~13:55 Martin Bremholm (Aarhus University)
Materials Chemistry and Structural Studies at High Pressure
- 13:55~14:10 Hideto Yanagihara (TREMS, University of Tsukuba)
Strain-controlled Spinel Ferrites for New Permanent Magnets
- 14:10~14:25 **Coffee Break (Lecture Room)**
- Chairman: Yasuhiko Yamamoto (TREMS, University of Tsukuba)
- 14:25~14:50 Yasuo Norikane (AIST)
Photoinduced Solid-liquid Phase Transition and Dynamic Motion of Azobenzene Crystals
- 14:50~15:05 Takashi Nakamura, Yuya Kaneko, Tatsuya Nabeshima (TREMS, University of Tsukuba)
A Large Macrocyclic That Binds Molecules by Multipoint Metal-ligand Coordination
- 15:05~15:35 Roland Stauber (University of Mainz)
Nanomaterial-based Antimicrobial Therapies: Principles and Limitations
- 15:35~15:50 **Coffee Break (Lecture Room)**

- Chairman: Takaki Kanbara (TREMS, University of Tsukuba)
- 15:50~16:20 Galina Marzun, Ina Haxhiaj, Junji Nakamura, Takahiro Kondo, Xiaorui Zhang, and Stephan Barcikowski (CENIDE, University of Duisburg-Essen, University of Tsukuba)
Laser-generated Nanoparticles for Energy-related Applications
- 16:20~16:35 Takahiro Kondo (TREMS, University of Tsukuba)
Hydrogen Boride Sheets Derived from MgB₂ by Cation Exchange
- 16:35~16:50 Yohei Yamamoto (TREMS, University of Tsukuba)
Conjugated Organic/Polymer Microcavities for Optical Resonators and Lasers
- Chairman: Junji Nakamura (TREMS, University of Tsukuba)
- 16:50~17:15 Kazunori Takada (NIMS)
Interfaces Governing the Performance of Solid-state Batteries
- 17:15~17:30 Takaki Kanbara (TREMS, University of Tsukuba)
Synthesis of Conjugated Polymers via C-H bond Functionalization Strategy
- 17:30~18:00 Shirley Knauer (CENIDE, University of Duisburg-Essen)
Small Meets Smaller - Nanoparticle Microbiome Interactions
- 18:30~ **Banquet**
OKURA FRONTIER HOTEL TSUKUBA (Cafe terrace CAMELLIA)

March 9th, 2018 (Friday) (Lecture Room 0110)

- Chairman: Yutaka Moritomo (TREMS, University of Tsukuba)
- 9:00~9:15 Yasuhiro Hatsugai (TREMS, University of Tsukuba)
New Paradigm of Topological Materials
- 9:15~9:40 Ashraful Islam (NIMS)
Perovskite Solar Cell for Next Generation Photovoltaics
- 9:40~10:05 Chikashi Nishimura, Hideo Yoshinaga, Seiji Sakurai, Koji Nakagawa, Hiroshi Yukawa, Yoshihisa Matsumoto (NIMS, Taiyo Koko Co. Ltd., Nagoya University, National Institute of Technology, Oita College, National Institute of Technology, Suzuka College)
Separation of High-purity Hydrogen Using Vanadium Alloy Membranes from Gas Mixtures of Nitrogen and Hydrogen
- 10:05~10:20 Priyanka Jood, Michihiro Ohta, Mercuri G. Kanatzidis, Atsushi Yamamoto, (AIST, Northwestern University and Argonne National Laboratory)
High Efficiency Thermoelectric Materials and Modules from Nanostructured PbTe.
- 10:20~10:35 **Coffee Break (Lecture Room)**
- Chairman: Yasuhiro Hatsugai (TREMS, University of Tsukuba)
- 10:35~10:50 Eiji Nishibori, Hidetaka Kasai, Venkatesha Rama Hathwar, Bo Iversen (TREMS, University of Tsukuba)
Accurate Charge Density Study for Quantum Crystallography
- 10:50~11:20 Ta-Jen Yen (National Tsing Hua University)
Seeing is believing: a super plasmonic probe and an invisible cloak!?
- 11:20~11:50 Jeppe Vang Lauritsen (Aarhus University)
Scanning Tunneling Microscopy Studies of Metal Oxide Catalysts for Electrochemical Water Splitting

11:50~13:10 **Poster Session and Lunch (Lecture Room)**

Chairman: Hiroshi Tadano (TREMS, University of Tsukuba)

13:10~13:25 Akira Uedono (TREMS, University of Tsukuba)

Study of Vacancy-type Defects in Materials for Widegap Semiconductor Devices by Using Positron Annihilation

13:25~13:55 Jyh Ming Wu (National Tsing Hua University)

Piezo-Catalytic Effect on the Enhancement of the Ultra-High Degradation Activity in the Dark

13:55~14:25 Gheeraert Etienne (University Grenoble Alpes)

Diamond for Next Generation Power Electronic Devices

14:25~14:40 **Coffee Break (Lecture Room)**

Chairman: Masahiro Sasaki

14:40~14:55 Noriyuki Iwamuro (TREMS, University of Tsukuba)

Investigation of Short-circuit Failure Mechanism of SiC MOSFETs

14:55~15:10 Takahide Umeda (TREMS, University of Tsukuba)

Electron-spin-resonance Characterization on Wide-band-gap Semiconductor MOS interfaces

15:10~15:25 Aboulaye Traore, Toshiharu Makino, Akira Nakajima, Hiromitsu Kato, Masohiko Ogura, Yukako Kato, Satoshi Yamasaki (AIST, University of Tsukuba)

Electrical Properties of High-voltage Diamond p-i-n diodes

15:25~15:55 Vallee Christophe (University Grenoble Alpes)

Atomic Layer Processing for Next Generation of Microelectronic Devices

15:55~16:10 **Coffee Break (Lecture Room)**

- Chairman: Noriyuki Iwamuro (TREMS, University of Tsukuba)
- 16:10~16:25 Ryu Hasunuma (TREMS, University of Tsukuba)
Characterization of SiO₂ Films on SiC
- 16:25~16:40 Hiroshi Yano (University of Tsukuba)
Characterization and Control of Interface Properties in SiC MOSFETs
- 16:40~17:10 Henri Mariette (University Grenoble Alpes)
Study of Potential Fluctuations in CZTSSe Single Crystal and Thin Film Solar
Cells by Optical and Admittance Spectroscopy
- 17:10~ **Closing Remarks**