

# **14th International Workshop on Nanostructures & Nanoelectronics**

*Online*

**March 5-6, 2024**

**Organized by**

**Research Institute of Electrical Communication  
Tohoku University**

**Co-Organized by**

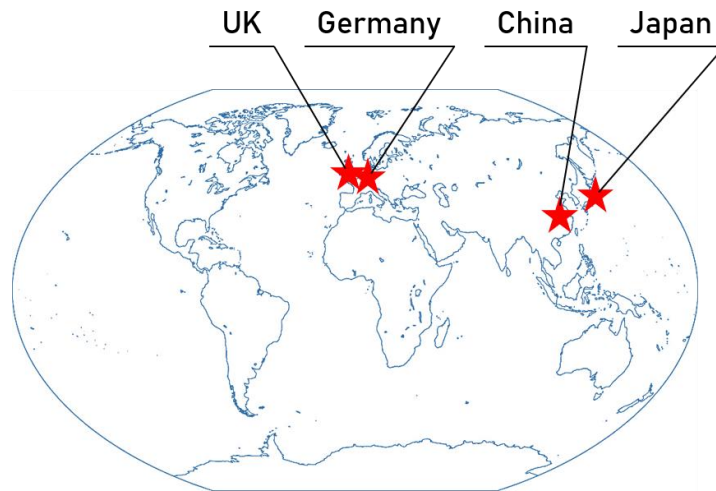
**Nano-Spin Engineering Seminar  
Cooperative Research Projects  
Information Biotronics Seminar**

**Cooperative Society**

**Division of Soft-Nanotechnology,  
The Japan Society of Vacuum and Surface Science**

# 14th International Workshop on Nanostructures & Nanoelectronics

**【Online】**



## **Scope:**

The objective of the symposium is to provide a good opportunity to present latest topics related to fabrication of nanostructures and their application to fields of nanoelectronics and bioelectronics, and to discuss key aspects of them.

## **Organizer:**

### **Symposium Chairs**

**Ayumi Hirano-Iwata**, Tohoku Univ.

**Ryugo Tero**, Toyohashi Univ. of Tech.

### **Program Committee**

**Ayumi Hirano-Iwata**, Tohoku Univ.

### **Organizing Committee**

**Ayumi Hirano-Iwata**, Tohoku Univ.

**Ryugo Tero**, Toyohashi Univ. of Tech.

**Daisuke Tadaki**, Tohoku Univ.

**Kaoru Hiramoto**, Tohoku Univ.

# Program

## March 5 (Tuesday)

**Red:** Local time in Japan (JST)

**Blue:** GMT

[ UK: GMT+0, Germany: GMT+1, China: GMT+8 ]

- 17:00 ~ 17:05**      Opening Remarks
- 8:00 ~ 8:05**      Ayumi Hirano-Iwata  
(Research Institute of Electrical Communication / WPI-Advanced Institute for Materials Research / Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan)
- (Chair: Daisuke Tadaki)
- 17:05 ~ 17:50**      Update on single atom co-catalysts in photocatalytic H<sub>2</sub> generation
- 8:05 ~ 8:50**      Patrik Schmuki  
(Department of Materials Science WW-4, LKO, Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany)
- 17:50 ~ 18:20**      Back-contact perovskite solar cells based on self-assembly
- 8:50 ~ 9:20**      Teng Ma<sup>1,2</sup>, Daisuke Tadaki<sup>3</sup>, Michio Niwano<sup>3,4</sup>, Ayumi Hirano-Iwata<sup>2,3</sup>  
(<sup>1</sup>School of Mechatronical Engineering, Beijing Institute of Technology, Beijing, China, <sup>2</sup>WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan, <sup>3</sup>Research Institute of Electrical Communication, Tohoku University, Sendai, Japan, <sup>4</sup>Graduate School of Dentistry, Tohoku University, Sendai, Japan)
- 18:20 ~ 18:45**      Preparation of scaffold with induced electromotive force composed of molecular nanocoils and evaluation of cell proliferation
- 9:20 ~ 9:45**      Yoko Tatewaki<sup>1</sup>, Tsuyoshi Minami<sup>2</sup>, Sadafumi Nishihara<sup>3</sup>, Tomoyuki Akutagawa<sup>4</sup>, Takayoshi Nakamura<sup>5</sup>  
(<sup>1</sup>Tokyo University of Agriculture and Technology, Koganei, Japan, <sup>2</sup>The University of Tokyo, Tokyo, Japan, <sup>3</sup>Hiroshima University, Hiroshima, Japan, <sup>4</sup>Tohoku University, Sendai, Japan, <sup>5</sup>Hokkaido University, Sapporo, Japan)
- 18:45 ~ 19:05**      Break
- 9:45 ~ 10:05**

(Chair: Kaoru Hiramoto)

19:05 ~ 19:35 Novel strategies in single molecule and single cell screening

10:05 ~ 10:35 Ren Ren, Shenglin Cai, Binoy Paulose Nadappuram, Xiaoyi Wang, Yaxian Liu, Zoe Kwan, Caroline Koch, Benedict Reilly-O'Donnell, Joshua Edel, Aleksandar P. Ivanov (Molecular Science Research Hub, Department of Chemistry, Imperial College London, London, United Kingdom)

19:35 ~ 20:05 Droplet nanopore microchip for single-molecule sensing

10:35 ~ 11:05 Yi-lun Ying

(State Key Laboratory of Analytical Chemistry for Life Science, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing, China)

## **March 6 (Wednesday)**

Red: Local time in Japan (JST)

Blue: GMT

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(Chair: Daisuke Tadaki)

17:00 ~ 17:45 Biosensing concepts using nanoimpact electrochemistry

8:00 ~ 8:45 Sebastian Freko, Lennart Weiß, Marta Nikic, Bernhard Wolfrum

(Neuroelectronics - ZEITlab, Munich Institute of Biomedical Engineering, Department of Electrical Engineering, School of Computation, Information and Technology, Technical University of Munich, Munich, Germany)

17:45 ~ 18:10 Microdomain formation in lipid bilayers induced by polyunsaturated lipids and

8:45 ~ 9:10 its function for membrane fusion

Ryugo Tero

(Toyohashi University of Technology, Toyohashi, Japan)

18:10 ~ 18:35 Lipid bilayers as nm-thick platforms for signal transduction

9:10 ~ 9:35 Ayumi Hirano-Iwata<sup>1,2,3</sup>, Madoka Sato<sup>1,3</sup>, Teng Ma<sup>2,4</sup>, Maki Komiya<sup>1</sup>,

Daisuke Tadaki<sup>1</sup>, Hideaki Yamamoto<sup>1</sup>

(<sup>1</sup>Research Institute of Electrical Communication, Tohoku University, Sendai, Japan, <sup>2</sup>WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan, <sup>3</sup>Graduate School of Biomedical Engineering, Tohoku University,

Sendai, Japan, <sup>4</sup>School of Mechatronical Engineering, Beijing Institute of Technology, Beijing, China,)

18:35 ~ 18:55 Break

9:35 ~ 9:55

(Chair: Ryugo Tero)

18:55 ~ 19:25 Anodic TiO<sub>2</sub> nanostructures: nanotopography matters in cell interactions

9:55 ~ 10:25 Anca Mazare<sup>1</sup>, Patrik Schmuki<sup>1,2</sup>

(<sup>1</sup>Department of Materials Science WW-4, LKO, Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany, <sup>2</sup>Regional Centre of Advanced Technologies and Materials, Olomouc, Czech Republic)

19:25 ~ 19:50 Nanothick thin film transistors for gas and UV sensing

10:25 ~ 10:50 Fumihiko Hirose

(Yamagata University, Yonezawa, Japan)

19:50 ~ 20:10 Coulomb-blockade-based nonlinear signal conversion in gold-nanoparticle random arrays

10:50 ~ 11:10

Yoshinao Mizugaki, Kenta Fujikura, Hiroshi Shimada

(The University of Electro-Communications (UEC Tokyo), Chofu, Tokyo, Japan)