

# **11th International Workshop on Nanostructures & Nanoelectronics**

*Online*

**March 1-2, 2021**

**Organized by**

**Research Institute of Electrical Communication  
Tohoku University**

**Co-Organized by**

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

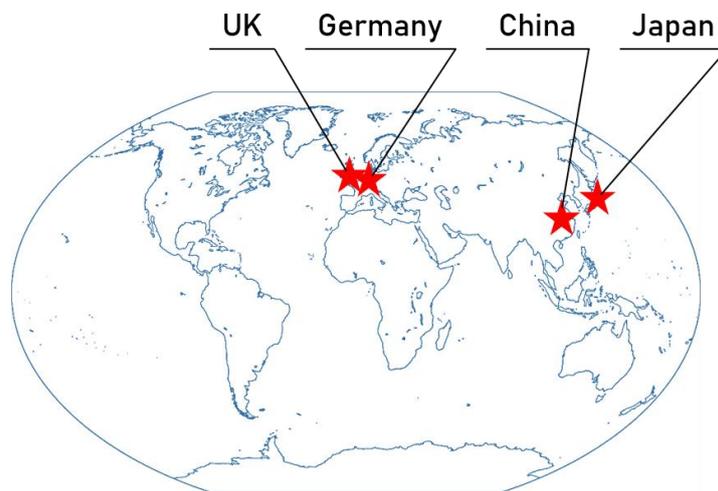
**Cooperative Society**

**CREST “Construction of ion and electron nano-channels  
in super-resistive lipid bilayers”, JST**

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

# 11th International Workshop on Nanostructures & Nanoelectronics

**【Online】**



## **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.

**Teng Ma**, Tohoku Univ.

**Daisuke Tadaki**, Tohoku Univ.

# Program

## March 1 (Monday)

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

**Blue:** UTC

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

**17:00 ~ 17:05**      Opening Remarks  
**8:00 ~ 8:05**      Ayumi Hirano-Iwata  
(Advanced Institute for Materials Research / Research Institute of Electrical Communication, Tohoku University, Sendai, Japan)

(Chair: Teng Ma)

**17:05 ~ 17:50**      Virus detection using graphene FET  
**8:05 ~ 8:50**      Kazuhiko Matsumoto  
(Institute of Scientific & Industrial Research, Osaka University, Ibaraki, Osaka, Japan)

**17:50 ~ 18:20**      RT atomic layer deposition of aluminum silicate and its application to ion sorption  
**8:50 ~ 9:20**      Fumihiko Hirose  
(Graduate School of Science and Engineering, Yamagata University, Yonezawa, Yamagata, Japan)

**18:20 ~ 18:50**      Composition of supported lipid bilayers including ionic lipids on charged substrates  
**9:20 ~ 9:50**      Ryugo Tero, Natsumi Kobayashi, Yuu Nakagawa  
(Department of applied chemistry and life sciences, Toyohashi University of Technology, Toyohashi, Japan)

**18:50 ~ 19:10**      Break  
**9:50 ~ 10:10**

(Chair: Ryugo Tero)

**19:10 ~ 19:55**      Electrolyte stabilization of aperture-suspended bilayers for nanopore sensing  
**10:10 ~ 10:55**      Maurits de Planque  
(School of Electronics and Computer Science & Institute for Life Sciences, University of Southampton, Southampton, United Kingdom)

- 19:55 ~ 20:25 Reconstituting photosynthetic model thylakoid membrane in the polymerized  
lipid bilayer scaffold  
10:55 ~ 11:25 Takuro Yoneda<sup>1</sup>, Yuka Kusunoki<sup>1</sup>, Daisuke Takagi<sup>1,2</sup>, Sophie A. Meredith<sup>3</sup>, Ashley M. Hancock<sup>3</sup>, Stephen D. Evans<sup>3</sup>, Peter G. Adams<sup>3</sup>, Kenichi Morigaki<sup>1,4</sup>  
(<sup>1</sup>Graduate School of Agricultural Science, Kobe University, Kobe, Japan, <sup>2</sup>Graduate School of Agricultural Science, Tohoku University, Sendai, Japan, School of Physics and Astronomy, University of Leeds, <sup>4</sup>Biosignal Research Center, Kobe University, Kobe, Japan)
- 20:25 ~ 20:45 Observation of cell-free synthesized Human ether-a-go-go related gene channels in  
artificial lipid bilayer  
11:25 ~ 11:45 Mervin Wei Shern Goh<sup>1</sup>, Haruka Inoue<sup>2</sup>, Yuzuru Tozawa<sup>2</sup>, Ryugo Tero<sup>1</sup>  
(<sup>1</sup>Department of applied chemistry and life sciences, Toyohashi University of Technology, Toyohashi, Japan, <sup>2</sup>Graduate School of Science and Engineering, Saitama University, Saitama, Japan)

## March 2 (Tuesday)

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

**Blue:** UTC

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

(Chair: Daisuke Tadaki)

- 17:00 ~ 17:45 Perfect hexagonal anodizing: (Titania)Nanotubes and Porous Alumina  
8:00 ~ 8:45 Patrik Schmuki  
(Department of Materials Science WW-4, LKO, University of Erlangen-Nuremberg, Erlangen, Germany)
- 17:45 ~ 18:15 Electromagnetic properties and structures of molecular nanocoils composed of  
organic charge transfer complexes  
8:45 ~ 9:15 Yoko Tatewaki<sup>1</sup>, Sadafumi Nishihara<sup>2</sup>, Tomoyuki Akutagawa<sup>3</sup>, Takayoshi Nakamura<sup>4</sup>  
(<sup>1</sup>Tokyo University of Agriculture and Technology, Koganei, Tokyo, Japan, <sup>2</sup>Hiroshima University, Hiroshima, Japan, <sup>3</sup>Tohoku University, Sendai, Japan, <sup>4</sup>Hokkaido University, Sapporo, Japan)

18:15 ~ 18:45      Artificial cell membrane as a novel platform for biosensing  
9:15 ~ 9:45        Ayumi Hirano-Iwata  
(Advanced Institute for Materials Research / Research Institute of Electrical  
Communication, Tohoku University, Sendai, Japan)

18:45 ~ 19:05      Break  
9:45 ~ 10:05

(Chair: Ayumi Hirano-Iwata)

19:05 ~ 19:35      Nanopore dynamic chemistry for single-molecule sensing  
10:05 ~ 10:35      Yi-lun Ying, Xinyi Li, Mengying Li, Yi-Tao Long  
(State Key Laboratory of Analytical Chemistry for Life Science, School of  
Chemistry and Chemical Engineering, Nanjing University, Nanjing, China)

19:35 ~ 20:05      AC impedance of a free-standing bilayer lipid membrane formed over an aperture  
10:35 ~ 11:05      in a nanofabricated silicon chip  
Yasutaka Tomioka<sup>1</sup>, Haruka Hirata<sup>1</sup>, Shogo Takashima<sup>1</sup>, Masataka Moriya<sup>1</sup>, Hiroshi  
Shimada<sup>1</sup>, Ayumi Hirano-Iwata<sup>2</sup>, Fumihiko Hirose<sup>3</sup>, Yoshinao Mizugaki<sup>1</sup>  
(<sup>1</sup>The University of Electro-Communications, Chofu, Tokyo, Japan, <sup>2</sup>Tohoku  
University, Sendai, Japan, <sup>3</sup>Yamagata University, Yonezawa, Yamagata, Japan,)

20:05 ~ 20:25      Development of solvent-free lipid bilayer microarray for parallel recordings of  
11:05 ~ 11:25      transmembrane hERG channel currents  
Daisuke Tadaki<sup>1</sup>, Ryusuke Miyata<sup>1</sup>, Daichi Yamaura<sup>1</sup>, Shun Araki<sup>1</sup>, Madoka Sato<sup>1</sup>,  
Maki Komiya<sup>1</sup>, Teng Ma<sup>2</sup>, Hideaki Yamamoto<sup>1</sup>, Michio Niwano<sup>3</sup>, Ayumi  
Hirano-Iwata<sup>1,2</sup>  
(<sup>1</sup>Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical  
Communication, Tohoku University, Sendai, Japan, <sup>2</sup>Advanced Institute for  
Materials Research, Tohoku University, Sendai, Japan, <sup>3</sup>Kansei Fukushi Research  
Institute, Tohoku Fukushi University, Sendai, Japan.)