

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

**Laboratory for Nanoelectronics and Spintronics  
Research Institute of Electrical Communication  
Tohoku University**

**Organized by**

**Research Institute of Electrical Communication  
Tohoku University**

**Co-Organized by**

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

**March 5-6, 2020  
Sendai, Japan**

# 11th International Workshop on Nanostructures & Nanoelectronics

March 5-6, 2020

**Site: Laboratory for Nanoelectronics and Spintronics, Research  
Institute of Electrical Communication, Tohoku University,  
Sendai, Japan**



## 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 5 (Thursday)**

**Room: 4F, Conference Room, *Laboratory for Nanoelectronics and Spintronics***

14:00 ~ 14:05      Opening Remarks  
Ayumi Hirano-Iwata  
(Advanced Institute for Materials Research / Research Institute of Electrical Communication, Tohoku University, Sendai, Japan)

(Chair: Ryugo Tero)

14:05 ~ 14:50      Sugar chain modified graphene FET for virus detection  
Kazuhiko Matsumoto  
(Institute of Scientific & Industrial Research, Osaka University, Japan)

14:50 ~ 15:35      Stabilized lipid membranes in analytical measurement platforms  
Craig A. Aspinwall  
(University of Arizona, Department of Chemistry and Biochemistry and Biomedical Engineering, Tucson, Arizona, USA)

15:35 ~ 15:55      Coffee Break

(Chair: Patrik Schmuki)

15:55 ~ 16:25      Artificial photosynthetic model thylakoid membrane embedded in the polymerized lipid bilayer scaffold  
Takuro Yoneda<sup>1</sup>, Yasushi Tanimoto<sup>1</sup>, Daisuke Takagi<sup>1,2</sup>, Kenichi Morigaki<sup>1,3</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,  
<sup>3</sup>Biosignal Research Center, Kobe University, Kobe, Japan)

16:25 ~ 16:55      *To be updated*  
Ayumi Hirano-Iwata  
(Advanced Institute for Materials Research / Research Institute of Electrical Communication, Tohoku University, Sendai, Japan)

16:55 ~ 17:15      A new approach for polarization control of piezoelectric PVDF films using surface chemical modification  
Daisuke Tadaki<sup>1</sup>, Shin Yamamiya<sup>1</sup>, Shintaro Matsumoto<sup>1</sup>, Teng Ma<sup>2</sup>, Yuji Imai<sup>3</sup>, Ayumi Hirano-Iwata<sup>1,2</sup>, Michio Niwano<sup>4</sup>

(<sup>1</sup>Research Institute of Electrical Communication, Tohoku University, Sendai, Japan, <sup>2</sup>Advanced Institute for Materials Research, Tohoku University, Sendai, Japan, <sup>3</sup>National Institute of Technology, Sendai College, Sendai, Japan, <sup>4</sup>Kansei Fukushi Research Institute, Tohoku Fukushi University, Sendai, Japan)

18:00 ~

Banquet

## **March 6 (Friday)**

**Room: 4F, Conference Room, *Laboratory for Nanoelectronics and Spintronics***

(Chair: Teng Ma)

9:00 ~ 9:45 *To be updated*

Patrik Schmuki

(Department of Materials Science WW-4, LKO, University of Erlangen-Nuremberg, Erlangen, Germany)

9:45 ~ 10:15 Electromagnetic properties of self-assembled molecular nanocoils composed of Tetrathiafulvalene derivatives with chiral part and F4TCNQ

Yoko Tatewaki

(The Graduate School of Engineering, Tokyo University of Agriculture and Technology, Koganei, Tokyo, Japan)

10:15 ~ 10:45 *To be updated*

Fumihiko Hirose

(Graduate School of Science and Engineering, Yamagata University, Yonezawa, Yamagata, Japan)

10:45 ~ 11:00 Coffee Break

(Chair: Craig A. Aspinwall)

11:00 ~ 11:30 *To be updated*

Ryugo Tero

(Toyohashi University of Technology, Toyohashi, Japan)

11:30 ~ 11:50 AC impedance of a free-standing bilayer lipid membrane formed over an aperture in a nanofabricated silicon chip

Yasutaka Tomioka<sup>1</sup>, Shogo Takashima<sup>1</sup>, Masataka Moriya<sup>1</sup>, Hiroshi Shimada<sup>1</sup>, Fumihiko Hirose<sup>2</sup>, Ayumi Hirano-Iwata<sup>3</sup>, Yoshinao Mizugaki<sup>1</sup>

(<sup>1</sup>The University of Electro-Communications, Chofu, Tokyo, Japan, <sup>2</sup>Yamagata University, Yonezawa, Yamagata, Japan, <sup>3</sup>Tohoku University, Sendai, Japan)

11:50 ~ 12:10 *To be updated*

Xingyao Feng

(Research Institute of Electrical Communication, Tohoku University, Sendai, Japan)