

# EU Flagship-Japan Second Workshop

May 6-7-8, 2017 – Barcelona



## Workshop schedule

*Request to all speakers: “Every speaker is asked to formulate as last slide one important specific goal that he/she really like to achieve within the next 3 years and what is the specific problem that prevents achieving that goal-collaboration needed for?”*

### **Saturday May 6 (materials)**

9:30 – 10:00 – Registration and opening (Stephan Roche, Alberto Morpurgo and Jari Kinaret)

#### **SESSION 1 Chairman Jari Kinaret**

10:00– 10:30 – Takashi Taniguchi (NIMS) *Issues in synthesis high quality hexagonal Boron Nitride single crystals and TMDC crystals by using solution growth process*

10:30 – 11:00 – Annick Loiseau (LEM, CNRS-ONERA, France) *Enabling BN 2D Material*

11:00 – 12:00 –Coffee Break & discussions

#### **SESSION 2 Chairman Toshiaki Enoki**

12:00 – 12:30 – Hiroki Ago (Kyushu Univ.) *Syntheses of high-quality graphene and related 2D materials for enhancing their applications*

12:30 - 13:00 – Christoph Stampfer (RWTH, Aachen, Germany) *High-mobility single- and bi-layer graphene from chemical vapor deposition on reusable copper*

13:00 – 14:30 Lunch

### SESSION 3 **Chairman Taiichi Otsuji**

14:30 – 15:00 - Frank Koppens (ICFO Spain) *Optoelectronics with 2d materials: science and applications*

15:00 – 15:30 - Shuji Hasegawa (Univ. Tokyo) *Atomic-Layer Superconductors*

15:30 – 16:00 - Francesco Mauri (La Sapienza, Italy)

16:00 – 17:30 – Coffee Break & discussions (**moderated by Chairpersons of the day**)

**Free time**

### **Sunday May 7 (Physics)**

#### SESSION 5 **Chairman Alberto Morpurgo**

9:30 – 10:00 – Yoshihiro Iwasa (Univ. Tokyo) *Superconducting and excitonic transport in noncentrosymmetric 2D materials*

10:00 – 10:30 – Ermin Malic (University of Chalmers, Sweden) *Exciton dynamics in atomically thin 2D materials*

10:30 – 11:30 – Coffee Break & discussions

#### SESSION 6 **Chairman Frank Koppens**

11:30 – 12:00 – Taiichi Otsuji (Tohoku Univ.) *Terahertz light amplification and emission in graphene-based plasmonic heterostructures*

12:00– 12:30 – Alessandro Tredicucci (CNR-Italy) *Graphene and THz; are they really made for each other?*

12:30– 13:00 – Riichiro Saito (Tohoku Univ.) *Thermoelectricity and THz optics of two dimensional materials*

13:00 – 14:30 Lunch

#### SESSION 7 **Chairman A. Kurobe**

14.30-15:00 – Andreas Kis (EPFL,Switzerland) *2D dichalcogenide electronic materials and devices*

15.00-15:30 – Tomoki Machida (Univ. Tokyo) *Quantum transport in van der Waals junctions of graphene and 2D materials*

15.30-16:00 – M. S. Bahramy (Univ. Tokyo) *Ubiquitous formation of type-II Dirac fermions and topological surface states in transition-metal dichalcogenides*

## SESSION 8

16.00-17:00 – Coffee Break & discussions (moderated by Chairpersons of the day)

18:00: Visit Sagrada Familia <http://www.sagradafamilia.org/es/>  
(walking distance from workshop place)

20:00 Dinner at Palau de la música

[http://www.palaumusica.cat/es/restaurante-mirador-del-palau\\_28806](http://www.palaumusica.cat/es/restaurante-mirador-del-palau_28806)

(Metro from Sagrada Familia-short trip)

## Monday May 8 (Devices)

### SESSION 5 Chairman Yoshihiro Iwasa

09:00 – 09:30 – Masashi Shirashi (Kyoto) *Spin-orbitronics using graphene and carbon nanotubes*

09:30 – 10:00 - Sergio Valenzuela (ICN<sub>2</sub>, Spain) *Spin and Hot-Carrier Transport in Graphene-Based Devices*

10:00 – 11:00 – Coffee Break & discussions

### SESSION 6 Chairman Hideo Aoki

11:00 - 11:30 – Michihisa Yamamoto (Univ. Tokyo) *Graphene-based valleytronics and superconductor electronics*

11:30 – 12:00 – Irina Grigorieva (University of Manchester, UK) *Superconductivity induced by alkali-metal doping: superconducting graphene and phosphorene*

12:00 – 12:30 – Tsutomu Nojima (Tohoku Univ.) *Electrochemical approach to induce high temperature superconductivity in FeSe electric double layer transistors*

12:30 – 14:00 Lunch

## **SESSION 7** Chairman **Stephan Roche**

14:00 – 14:30 – Hideo Aoki (Univ. Tokyo) *Designing topological and superconducting properties for graphene-related materials*

14:30 – 15:00 – Taishi Takenobu (Nagoya Univ.) *Electric Double Layer Functionalization of Large-Area Transition Metal Dichalcogenide Monolayer Films*

15:00 – 15:30 – Paco Guinea (IMDEA, Spain) *Topological quantum computing and Andreev states in two dimensional materials. Novel results.*

15:30 – 16:30 – Coffee Break & discussions

## **SESSION 8**

16:30 – 18:00 – Round table (**scientific summary & funding opportunities**)

Atsushi Kurobe (2dCREST), Riichiro Saito (Science of Atomic Thin Layers (SATL)) and Jari Kinaret (graphene Flagship international program)

**End of workshop**

## **Participants:**

### **EU participants**

Alberto Morpurgo, Jari Kinaret and Stephan Roche

### **Speakers**

Annick Loiseau (LEM, CNRS-ONERA, France)

Irina Grigorieva (University of Manchester, UK)

Christoph Stampfer (RWTH, Aachen, Germany)

Francesco Mauri (La Sapienza, Italy)

Ermin Malic (University of Chalmers, Sweden)

Paco Guinea (IMDEA, Spain)

Frank Koppens (ICFO Spain)

Sergio Valenzuela (ICN2, Spain)

Andreas Kis (EPFL, Switzerland)

Alessandro Tredicucci (CNR-Italy)

### **Japanese participants**

Toshiaki Enoki and Seiichiro Kawamura

A. Kurobe, R. Saito

## **Speakers**

Takashi Taniguchi (NIMS) h-BN

Hiroki Ago (Kyushu Univ.)

Taishi Takenobu (Nagoya Univ.)

Yoshihiro Iwasa (Univ. Tokyo)

M. S. Bahramy (Univ. Tokyo)

Tsutomu Nojima (Tohoku Univ.)

Michihisa Yamamoto (Univ. Tokyo)

Shuji Hasegawa (Tokyo)

Hideo Aoki (Univ. Tokyo)

Masashi Shirashi (Kyoto)

Taiichi Otsuji (Tohoku Univ.)

Tomoki Machida (Univ. Tokyo)

Riichiro Saito (Tohoku University)