

Programme EU-Japan Workshop

The 4th Graphene Flagship EU-Japan Workshop on Graphene and related 2D materials



18 - 20 November 2019

Palazzo della Carovana, Scuola Normale Superiore

Piazza dei Cavalieri 7, 56126 Pisa, Italy

Workshop chairs: Camilla Coletti (Italy), Christoph Stampfer (Germany), Taiichi Otsuji (Japan), Tomoki Machida (Japan)

Programme chairs: Jari Kinaret (Sweden) and Atsushi Kurobe (Japan)

November 18, 2019		
08:30	Registration and welcome	
09:00 – 09:10	<i>Camilla Coletti/ Taiichi Otsuji</i>	General Chair
09:10 – 09:20	<i>Atsushi Kurobe</i>	JST CREST
09:20 – 09:30	<i>Jari Kinaret</i>	Graphene Flagship
Session 1: PHYSICS 1 <i>Chair: Takao Sasagawa</i>		
09:30 – 09:55	<i>Riichiro Saito</i>	Edge plasmon of two-dimensional materials
09:55 – 10:20	<i>Jose H. Garcia Aguilar</i>	Spin-Valley Coupling Induce Room-temperature Spin-to-Charge Conversion in Graphene/Transition Metal Dichalcogenide heterostructures
10:20 – 10:45	<i>Mikito Koshino</i>	Physics of twisted 2D materials
10:45 – 11:00	Coffee break	
11:00 – 11:25	<i>Kazuhiro Yanagi</i>	Intersubband plasmons in tubular nano-carbon structures
11:25 – 11:50	<i>Marco Polini</i>	Collective excitations in twisted bilayer graphene close to the magic angle

11:50 – 12:15	<i>Tomoki Machida</i>	Cyclotron resonance absorption of mid-infrared light in van der Waals heterostructures of graphene and 2D materials
12:15 – 14:00	Lunch	
Session 2: DEVICES 1 <i>Chair: Camilla Coletti</i>		
14:00 – 14:25	<i>Yasumitsu Miyata</i>	Growth and device applications of transition-metal-dichalcogenide in-plane heterostructures
14:25 – 14:50	<i>Taishi Takenobu</i>	Circularly polarized electroluminescence induced by strain effect
14:50 – 15:15	<i>Peter Bøggild</i>	Patterning graphene: clearing the path for graphene nanoelectronics
15:15 – 15:40	<i>Gianluca Fiori</i>	Perspectives of 2DMs based electronics
15:40 – 16:05	<i>Junji Tominaga</i>	Interfacial phase change memory: Physics and application
16:45 – 18:15	Guided visit of Piazza del Duomo	
19:30 – 21:00	Dinner (<i>Osteria i Santi</i> Restaurant)	

November 19, 2019		
Session 3: MATERIALS 1 <i>Chair: Toshiaki Kato</i>		
09:00 – 09:25	<i>Ute Kaiser</i>	Understanding the Dynamics of Advanced Low-Dimensional Materials by Low-Voltage Atomic-Scale TEM and EELS experiments
09:25 – 09:50	<i>Masaki Nakano</i>	Superconductivity and magnetism in MBE-grown TMDC ultrathin films and heterostructures
09:50 – 10:15	<i>Alberto Ciarrocchi</i>	Excitonic valleytronic devices in 2D heterostructures
10:15 – 10:45	Coffee break	
10:45 – 11:10	<i>Iwao Matsuda</i>	Evolutions of the Dirac fermions in monatomic layers
11:10 – 11:35	<i>Annick Loiseau</i>	Momentum-resolved EELS in a TEM of free standing black phosphorus down to the monolayer
11:35 – 12:05	<i>Daisuke Kiriya</i>	Electronic structure modification of TMDC materials by spontaneously patterned molecular dopant film
12:05 – 13:30	Lunch	
Session 4: DEVICES 2 <i>Chair: Christoph Stampfer</i>		
13:30 – 13:55	<i>Taiichi Otsuji</i>	Graphene-based van der Waals heterostructures towards a new type of terahertz quantum-cascade lasers

13:55 – 14:20	<i>Cedric Huyghebaerth</i>	First steps of 2D material integration in 300mm silicon production line
14:20 – 14:45	<i>Hideyuki Maki</i>	Nanocarbon-based optoelectronic devices on silicon chips
14:45 – 15:10	<i>Max Lemme</i>	Graphene and 2D Optoelectronics
15:10 – 15:35	<i>Hitoshi Wakabayashi</i>	TMDC FETs using sputtering and sulfurization processes
15:35 – 16:00	Coffee break	
Session 5: PHYSICS 2 <i>Chair: Mikito Koshino</i>		
16:00 – 16:25	<i>Francesco Mauri</i>	Momentum-resolved EELS with an electron microscope: phonon and quasi-particle dispersion in 2D membranes
16:25 – 16:50	<i>Takao Sasagawa</i>	Exploration of topological electronic materials having exotic quasi-particles
16:50 – 17:15	<i>Giulio Cerullo</i>	Ultrafast charge transfer in heterostructures of 2D materials
17:15 – 17:40	<i>Kazunari Matsuda</i>	Optical probing and control of excitonic states in atomically thin two-dimensional materials
17:40 – 18:05	<i>Christoph Stampfer</i>	Spin-valley coupling in bilayer graphene quantum devices
19:30 – 21:00	Dinner (La Pergoletta Restaurant)	

November 20, 2019		
Session 6: MATERIALS 2 <i>Chair: Peter Bøggild</i>		
08:30 – 08:55	<i>Kazuhiko Matsumoto</i>	Biomedical applications of graphene
08:55 – 09:20	<i>Cinzia Casiraghi</i>	Water-based and biocompatible inkjet printable 2D-inks: from all-printed devices to biological applications
09:20 – 09:45	<i>Toshiaki Kato</i>	CVD growth of 1 million graphene on the device
09:45 – 10:15	Coffee break and posters	
10:15 – 10:40	<i>Jack Alexander-Webber</i>	Scalable device integration and passivation techniques for 2D materials
10:40 – 11:05	<i>Camilla Coletti</i>	Going beyond copper: wafer-scale synthesis of graphene on sapphire
11:05 – 12:00	Discussion and conclusions	
12:00 – 13:30	Lunch	
13:30 – 15:00	Final remarks	

List of participants

Title	Last name	First name	Institution	Country
Dr.	Alexander-Weber	Jack	University of Cambridge	United Kingdom
Prof.	Bøggild	Peter	DTU – Technical University of Denmark	Denmark
Prof.	Casiraghi	Cinzia	The University of Manchester	United Kingdom
Prof.	Cerullo	Giulio Nicola	Politecnico Milano	Italy
Dr.	Ciarrocchi	Alberto	EPFL – Ecole polytechnique fédérale de Lausanne	Switzerland
Dr.	Coletti	Camilla	IIT – Istituto Italiano di Tecnologia	Italy
Emer. Prof.	Enoki	Toshiaki	Tokyo Institute of Technology	Japan
Prof.	Fiori	Gianluca	UNIFI – Università di Pisa	Italy
Prof.	Garcia	José Hugo	ICN2 – Institut Català de Nanociència i Nanotecnologia	Spain
Dr.	Huyghebaert	Cedric	IMEC	Belgium
Prof.	Kaiser	Ute	Ulm Universität	Germany
Assoc. Prof.	Kato	Toshiaki	Tohoku University	Japan
Senior Rschr.	Katsumata	Yasuhiro	JST Strategic Rsch. Promotion Div.	Japan
Prof.	Kinaret	Jari	Chalmers University of Technology (Director, Graphene Flagship)	Sweden
Dr.	Kiriya	Daisuke	Osaka Prefecture University	Japan
Prof.	Koshino	Mikito	Osaka University	Japan
Rsch. Superv. Chief Fellow	Kurobe	Atsushi	JST CREST	Japan
Prof.	Lemme	Max	RWTH Aachen University / AMO GmbH	Germany
Dr.	Loiseau	Annick	ONERA	France
Prof.	Machida	Tomoki	Univ. Tokyo	Japan
Assoc. Prof.	Maki	Hideyuki	Keio University	Japan
Prof.	Matsuda	Kazunari	Kyoto University	Japan
Prof.	Matsuda	Iwao	The University of Tokyo	Japan
Prof.	Matsumoto	Kazuhiko	Osaka University	Japan
Prof.	Mauri	Francesco	University of Rome 'La Sapienza'	Italy
Assoc. Prof.	Miyata	Yasumitsu	Tokyo Metropolitan University	Japan
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Prof.	Otsuji	Taiichi	Tohoku University	Japan
Dr.	Polini	Marco	IIT – Istituto Italiano di Tecnologia	Italy
Prof.	Saito	Riichiro	Tohoku University	Japan
Prof.	Sasagawa	Takao	Tokyo Institute of Technology	Japan
Prof.	Stampfer	Christoph	RWTH – Rheinisch-Westfälische Technische Hochschule Aachen	Germany
Prof.	Takenobu	Taishi	Nagoya University	Japan
Dr.	Tominaga	Junji	AIST – National Institute of Advanced Industrial Science and Technology	Japan
Dr.	Vacchi	Isabella	ESF – European Science Foundation	France
Prof.	Wakabayashi	Hitoshi	Tokyo Institute of Technology	Japan
Prof.	Yanagi	Kazuhiro	Tokyo Metropolitan University	Japan