

Program

**Advances and Applications in Carbon Related Nanomaterials:
From Pure to Doping Including Heteroatom Layers**

An ECI Conference

September 22-26, 2013

**Gran Hotel Rey Don Jaime
Castelldefels, Spain**

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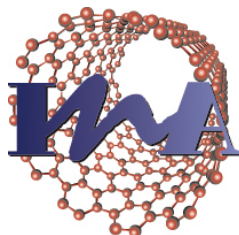
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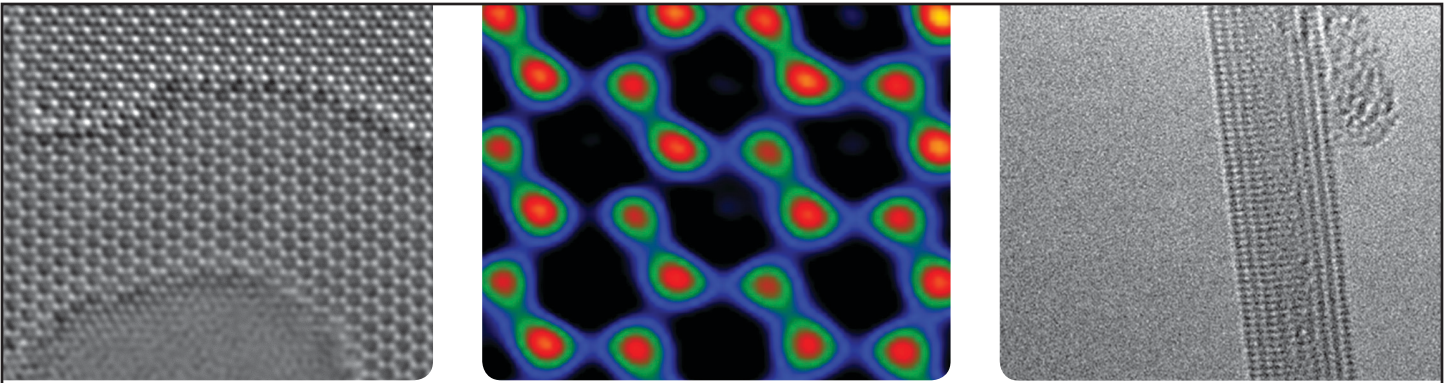
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Left: Double layer graphene; Middle: Single layer graphene; Right: Multi-layer carbon nanotubes.

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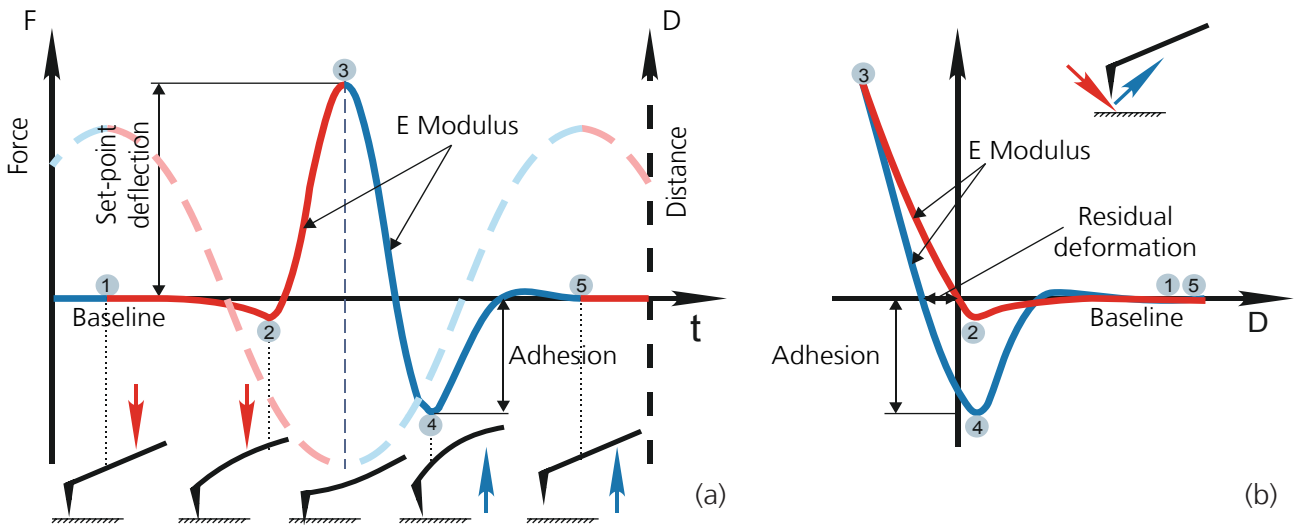
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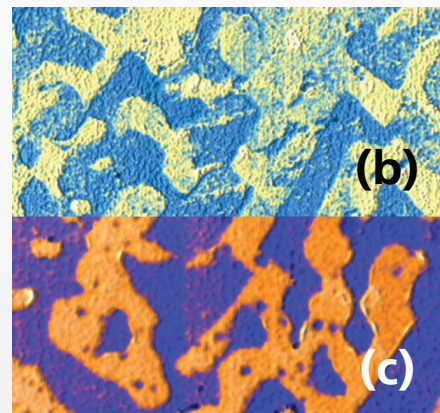
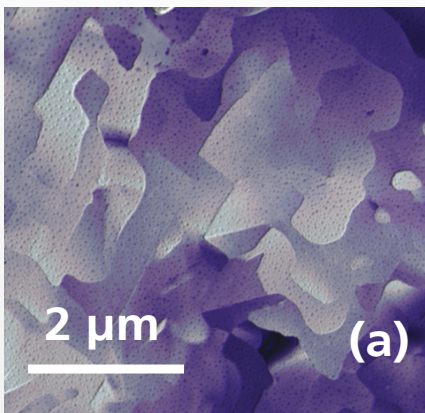
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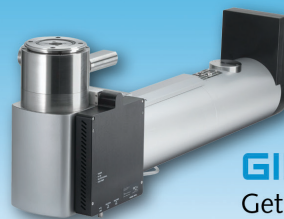
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Sunday, September 22, 2013

17:30 - 19:00	Conference Check-in / Registration (Hotel Lobby)
19:00 - 20:00	Welcome Drink (Terrace by the swimming pool)
20:00 - 21:30	Dinner

NOTES

- Please do not smoke at any conference functions.
- Turn your mobile telephones to vibrate or off during technical sessions.
- The location of technical sessions and poster sessions will be announced on Sunday.
- All meals will be in the hotel restaurant.
- Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.

Monday, September 23, 2013

- 07:30 - 08:50 Breakfast
- 08:50 - 09:00 **Opening Remarks:** Raul Arenal, Chair
Dean Miller, ECI Conferences Committee
- 09:00 - 11:00 **Session I: Doping of C nanotubes & graphene 1**
Session chair: Chris Ewels
- 09:00 - 09:40 ***Invited Talk:* Changes induced by doping on the Raman spectrum of monolayer and bilayer graphene**
Jean-Louis Sauvajol, University of Montpellier, France
- 09:40 - 10:00 **Nitrogen-doped carbon nanotubes: Thin films, dopant identification, and electron beam damage**
Toma Susi, Aalto University, Finland
- 10:00 - 10:20 **Fluidized bed chemical vapor deposition of nitrogen-doped carbon nanotubes for the energy storage application**
Guili Tian, Tsinghua University, China
- 10:20 - 11:00 ***Invited Talk:* New directions toward ultra-low substitutional doping**
Paola Ayala, Vienna University, Austria
- 11:00 - 11:30 Coffee break
- 11:30 - 13:50 **Session II: Graphene 1**
Session chair: Pierre Petit
- 11:30 - 12:10 ***Invited Talk:* Electronic structure of a disordered grain boundary in graphene**
Philippe Lambin, University of Namur, Belgium
- 12:10 - 12:30 **Gate modulated Raman spectroscopy of single-layer and bilayer graphene**
Riichiro Saito, Tohoku University, Japan
- 12:30 - 12:50 **Non-covalent interactions in graphene-polymer nanocomposites**
Gregory Van Lier, Free University of Brussels, Belgium
- 12:50 - 13:10 **Formation of grain boundary induced by electron irradiation on graphene**
Kotone Hasegawa, National Institute for Materials Science, Japan
- 13:10 - 13:50 ***Invited Talk:* Atomically precise graphene nanoribbons**
Roman Fasel, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
- 14:00 - 15:15 Lunch
- 15:15 - 17:30 *Ad hoc* sessions, discussion, free time

Monday, September 23, 2013 (continued)

- 17:30 - 18:55 **Session III: Carbon nanotubes 1**
Session chair: **Martine Mayne-L'Hermite**
- 17:30 - 18:10 **Invited Talk: Properties of individual nanotubes with known chiral structure**
Xuedong Bai, Institute of Physics, Chinese Academy of Sciences, China
- 18:10 - 18:30 **New approaches for the characterization of porous electrodes based on carbon nanotubes for oxygen reduction: From PT loaded CNT to nitrogen doped CNT**
Henri Perez, CEA-Saclay, France
- 18:30 - 18:50 **Bias-dependent remote joule heating by a carbon nanotube**
Merijn Bronsgeest, University of Maryland, USA
- 19:00 - 20:30 **Poster Session and Social Hour**
All posters will be kept on display throughout the conference. Participants will then be free to view/discuss posters at their convenience as well.
- 20:45 - 22:15 Dinner

Tuesday, September 24, 2013

- 07:30 - 08:45 Breakfast
- 08:55 - 09:00 **Announcements: Raul Arenal, Chair**
- 09:00 - 11:00 **Session IV: Chalcogenides 1**
Session chair: **Vincent Meunier**
- 09:00 - 09:40 ***Invited Talk: Inorganic nanotubes and fullerene-like nanoparticles: an update***
Reshef Tenne, Weizmann Institute, Israel
- 09:40 - 10:00 **2D transition-metal dichalcogenides: Doping, alloying and electronic structure engineering using electron beam**
Arkady Krasheninnikov, Aalto University, Finland
- 10:00 – 10:20 **Novel routes to hybrid chalcogenide nanomaterials**
Frank Dillon, Department of Materials, Oxford University, UK
- 10:20 – 10:40 **Nanostructures of layered metal chalcogenides**
Gotthard Seifert, Technical University of Dresden, Germany
- 10:40 – 11:00 **NT-MDT & Renishaw (10 min. each)**
- 11:00 – 11:30 Coffee break
- 11:30 – 13:30 **Session V: Doping of C nanotubes & graphene 2**
Session chair: **Dmitri Golberg**
- 11:30 - 12:10 ***Invited Talk: Nanotube-Molecular complexes for energy transfer systems***
Friederike Ernst, Free University of Berlin, Germany
- 12:10 - 12:30 **Influence of the nature of precursors and temperature on the structure and N-content in nitrogen containing carbon nanotube arrays**
Martine Mayne-L'Hermite, CEA-Saclay, France
- 12:30 - 12:50 **Bonding of nitrogen dopants in graphene**
Rebecca J. Nicholls, Department of Materials, Oxford University, UK
- 12:50 - 13:10 **Nitrogen doped single-walled carbon nanotubes: Atomic structure and configuration**
Raul Arenal, University of Zaragoza, Spain
- 13:10 - 13:30 **Nitrogen, boron and phosphorus doping in carbon nanomaterials: Insight from DFT calculations**
Chris Ewels, CNRS/ University of Nantes, France
- 13:30 -15:00 Lunch
- 15:00 -18:15 *Ad hoc* sessions, discussion, free time

Tuesday, September 24, 2013 (continued)

- 18:15 – 19:15 **Session VI: Chalcogenides 2**
Session chair: **Arkady Krasheninnkov**
- 18:15 – 18:35 **Heterostructured materials for nanoelectronics: Computational design and controlled properties**
Vincent Meunier, Rensselaer Polytechnic Institute, USA
- 18:35 – 19:15 ***Invited Talk: Optical properties of graphene nanoribbons inside single-wall carbon nanotubes***
Elena Obraztsova, Russian Academy of Sciences, Russia
- 19:15 – 20:30 **Poster Session and Social Hour**
All posters will be kept on display throughout the conference. Participants will then be free to view/discuss posters at their convenience as well.
- 20:45 - 22:15 Dinner

Wednesday, September 25, 2013

- 07.30 - 08:55 Breakfast
- 08:55 - 09:00 **Announcements: Raul Arenal, Chair**
- 09:00 - 11:00 **Session VII: Carbon nanotubes 2 + Hybrids (NP + NT or Graphene) 1**
Session chair: **Riichiro Saito**
- 09:00 - 09:40 ***Invited Talk:* Electronic transport properties of functionalized metallicity sorted single walled carbon nanotubes: Gain from photoemission and XAS**
Thomas Pichler, University of Vienna, Austria
- 09:40 - 10:00 **CNT-reinforced electrospun carbon fibers: Promising electrodes for energy production by enzymatic biofuel cells**
Sophie Tingry, European Institute of Membranes, France
- 10:00 - 10:20 **Synthesis and potential applications of pyrolytic carbon nano-cones**
Mathieu Delmas, CEMES-CNRS, France
- 10:20 - 10:40 **Modeling the encapsulation of clusters and one-dimensional crystals in carbon nanotubes**
Eric Faulques, University of Nantes CNRS, France
- 10:40 - 11:00 **Controlling the nanoscale rippling of graphene with nanoparticles**
Zoltán Osváth, Research Centre for Natural Sciences (MTA TTK), Institute for Technical Physics and Materials Science (MFA), Hungary
- 11:00 - 11:30 Coffee break
- 11:30 - 13:30 **Session VIII: Other layered nanostructures 1**
Session chair: **Philippe Lambin**
- 11:30 - 12:10 ***Invited Talk:* Synthesis and heterostructures of 2D materials**
James Hone, Columbia University, USA
- 12:10 - 12:30 **Lighting up excitons at defects in h-BN flakes**
Alberto Zobelli, University of Paris Sud, France
- 12:30 - 12:50 **Hierarchical 1D and 2D boron nitride nanoarchitectures: Synthesis, growth mechanism and wetting properties**
Amir Pakdel, National Institute for Materials Science (NIMS), Japan
- 12:50 - 13:10 **Hydroxyapatite multiwalled carbon nanotube and graphene oxide hetero-nanostructures: Integration and bioactivity**
Jesus David Nuñez Garcia, ICB-CSIC, Spain
- 13:10 - 13:30 Lunch (lunch box) and visit to Barcelona
- 20:30 – 21:00 Reception
- 21:00 - 23:30 Conference Banquet

Thursday, September 26, 2013

- 07:30 - 08:45 Breakfast
- 08:55 - 09:00 **Announcements: Raul Arenal, Chair**
- 09:00 - 10:55 **Session IX: Hybrids (NP + NT or Graphene) 2**
Session chair: **Thomas Pichler**
- 09:00 - 09:40 ***Invited Talk:* Carbon-based materials with tailored properties: Preparation and Applications**
Wolfgang Maser, CSIC-Zaragoza, Spain
- 09:40 - 10:00 **Study of the thermal stability of supported catalytic nanoparticles for the growth of single walled carbon nanotubes with narrow diameter distribution**
Pierre Petit, Institut Charles Sadron CNRS, France
- 10:00 - 10:20 **Experimental and theoretical insights of the chemistry at the carbon nanotube supported ruthenium nanocatalysts interface**
Iann Gerber, Université de Toulouse; INSA, UPS, CNRS; LPCNO, France
- 10:20 - 10:40 **TBD**
Katya Obraztsova, Russian Academy of Sciences, Russia
- 10:40 - 11:25 Coffee break (at Swimming Pool Terrace)
- 11:25 - 13:05 **Session X: Other layered nanostructures 2**
Session chair: **Raul Arenal**
- 11:25 - 12:05 ***Invited Talk:* Atomic imaging and spectroscopy of single-layered nano-materials**
Kazu Suenaga, AIST, Japan
- 12:05 - 12:25 **Atomistic simulations of nanocrystal/amorphous carbon-based composite materials**
Georgios Kopidakis, University of Crete, Greece
- 12:25 - 12:45 **Synthesis and characterisation of hetero-carbon nanotubes**
Jonathan Quinson, Department of Materials, Oxford University, UK
- 12:45 - 13:05 **Direct visualization of hierarchical nanodomains in polymer-fullerene bulk heterojunction solar cells using chromatic aberration-corrected TEM**
Dean Miller, Argonne National Laboratory, USA
- 13:05 - 13:15 Closing remarks
- 13:15 - 14:45 Lunch and departures

Poster Presentations

1. **Nitrogen-doped single-walled carbon nanotube/graphene hybrids: Controllable synthesis, hierarchical nanostructure, and oxygen reduction performance**
Guili Tian, Tsinghua University, China
2. **Structural and surface properties of nitrogen doped and phosphorus doped carbon nanotubes: A comparability study**
Edward Nxumalo, University of Johannesburg, South Africa
3. **Synthesis of boron-substituted single-wall carbon nanotubes by arc discharge**
Djamel Eddine Gourari, laplace/CEMES Toulouse, France
4. **Atomic structure of ultra-long carbon nanotubes**
Raul Arenal, Universidad de Zaragoza, Spain
5. **In-situ KEV-ion irradiation studies on single-walled boron nitride and carbon nanotubes**
Raul Arenal, Universidad de Zaragoza, Spain
6. **Graphene on cobalt through chemical vapor deposition: unraveling the relation between graphene properties and the cobalt substrate**
Merijntje Bronsgeest, CNRS Grenoble, France
7. **Boron mediated nanotube morphologies**
Rebecca Nicholls, University of Oxford, UK
8. **Field-effect transistors based on WS₂ nanotubes with high current-carrying capacity**
Roi Levi, Weizmann Institute of Science, Israel
9. **Theoretical study of electronic properties of graphene on a BN monolayer substrate**
Rafael Martinez Gordillo, CSIC/ICN2, Spain

