

Graphene Technology: Production, Assembly and Applications

15th & 16th July 2011, Cambridge UK

Babbage Lecture Theatre, New Museum site

Program

Friday 15th July 2011

9:00-9:15

Opening Remarks: A.C. Ferrari and M. Chhowalla

Processing and Functionalization (9:15-10:30)

Chair: M. Chhowalla

Rutgers University (USA)

9:15 -9:45

(Invited) Molecular-Scale Tailoring of Graphene Surface Chemistry via Organic Functionalization

M. Hersam

Department of Materials Science & Engineering, McCormick School of Engineering & Applied Science
Northwestern University (USA)

9:45 – 10:00

Selective Edge Functionalization of Graphene by Room Temperature Mild Plasma Treatment

T. Kato¹, L. Jiao², X. Wang², H. Wang², X. Li², L. Zhang², R. Hatakeyama¹, H. Dai²,

¹Dept. of Electronic Engineering, Tohoku University (Japan), ²Dept. of Chemistry and Laboratory for Advanced Materials, Stanford University (USA)

10:00-10:15

Fabrication of Graphene-based Electronic Devices by Selective Electrochemical Reduction in Air

J. Mativetsky¹, A. Liscio², E. Treossi², A. Zanelli², P. Samorì¹, V. Palermo²,

¹ISIS – CNRS, Université de Strasbourg (France), ²ISOF- Consiglio Nazionale delle Ricerche (Italy)

10:15-10:30

Highly Efficient Exfoliation and Sorting of Graphite flakes

F. Bonaccorso¹, G. Privitera¹, F. Torrisi¹, V. Nicolosi², T. Hasan¹, G. Savini¹, N. Pugno³,
A.C. Ferrari¹,

¹Department of Engineering, University of Cambridge (UK), ²Department of Materials, Oxford University (UK), ³Department of Structural Engineering, Politecnico di Torino (Italy)

10:30-11:00

Coffee break

Growth (11:00-12:30)

Chair: J.H. Ahn

Sungkyunkwan University (Korea)

11:00-11:30

(Invited) Atomic Layer Growth of Graphene Films

L. Colombo

Texas Instruments Incorporated (USA)

11:30-11:45

Epitaxial CVD Growth of Single-Layer Graphene Over Metal Films Crystallized on Sapphire and MgO

H. Ago¹, Y. Ito¹, B. Hu¹, Y. Ogawa¹, C. Orofeo¹, K. Kawahara¹, M. Tsuji¹, K. Ikeda¹, S. Mizuno¹, H. Hibino²,

¹Kyushu University (Japan), ²NTT Basic Research Laboratories (Japan)

11:45-12:00

Direct Growth of Nanographene on Glass

J. Choi, C. Lee,

Kyung Hee University (Korea)

12:00-12:30

(Invited) Growth Dynamics of Graphene Nanoislands, Nanoripples and Nanobubbles

K. P. Loh

Department of Chemistry, National University of Singapore (Singapore)

12.30-15.00 Lunch + Poster Session 1 (The Bowling Green, Pembroke College)

Quantum Transport (15:00-16:30)

Chair: S. Roche

Centre d'Investigacio en Nanociencia I Nanotecnologia (Spain)

15:00-15:30

(Invited) Transport in Graphene Constrictions and Quantum Dots

T. Ihn

Solid State Physics Laboratory, Eidgenössische Technische Hochschule Zurich (Switzerland)

15:30-15:45

Graphene Charge Detectors Meet Nanotube Quantum Dots

S. Engels¹, B. Terres^{1,2}, C. Volk^{1,2}, J. Dauber¹, P. Weber¹, S. Trellenkamp², C. Stampfer^{1,2},

¹JARA-FIT and II. Institute of Physics, RWTH Aachen (Germany), ²Peter Grünberg Institute Forschungszentrum Jülich (Germany)

15:45-16:00

Spin-Orbit Coupling and Weak Localization in Graphene

E. McCann, V. Fal'ko

Physics Department, Lancaster University (UK)

16:00-16:30

(Invited) Energy Dissipation and Transport in Graphene Devices

E. Pop

University of Illinois (USA)

16.30-17.00

Coffee break

RF Electronics (17:00-18:30)

Chair: L. Colombo

Texas Instruments Incorporated (USA)

17:00-17:30

(Invited) High-Frequency Graphene Devices and Circuits

Y.M. Lin

IBM T. J. Watson Research Center, Yorktown Heights (USA)

17:30-17:45

High Frequency Coplanar Graphene Waveguides on Low-loss Dielectric Substrates

H.S. Skulason¹, H. Nguyen², A. Guermoune³, M. Siaj³, C. Caloz², T. Szkopek¹,

¹Dept. of Electrical and Computer Engineering, McGill University (USA), ²Poly-Grames Research Center, École Polytechnique de Montréal (Canada), ³Département de Chimie, Université du Québec à Montréal (Canada)

17:45-18:15

(Invited) Graphene RF Devices: New Opportunities for Ubiquitous Electronics

T. Palacios

Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology (USA)

19.00 Welcome drinks

19.30 Satellite Dinner

Saturday 16th July 2011

Transistors and Sensors (9:15-10:30)

Chair: J. Kinaret

Chalmers University of Technology (Sweden)

9:00-9:30

(Invited) Graphene Bionanoscience & Engineering: Toward Single-molecule DNA Sequencing

G. Schneider

Delft University of Technology (Netherlands)

9:30-9:45

Graphene for Next-Generation Electronics: Limits and Perspectives

G. Fiori, G. Iannaccone, S. Bruzzone, A. Betti,

Dipartimento Ingegneria dell'Informazione, Università di Pisa (Italy)

9:45-10:00

Graphene Logic Gates and Memories with Improved Current On/Off Ratio

R. Sordan¹, F. Traversi¹, F. Nichele¹, E. Stützel², A. Sagar², K. Balasubramanian², M. Burghard², K. Kern^{2,3},

¹L-NESS Como, Politecnico di Milano (Italy), ²Max-Planck-Institut für Festkörperforschung (Germany), ³Institute de Physique des Nanostructures, EPFL (Switzerland)

10:00-10:15

Selective-Area-Grown Graphene Transistor by Thermal Chemical Vapour Deposition Method

M. Okai¹, K. Tokumoto², T. Kyotani², M. Tokuda³, K. Tsutsui³, Y. Wada³,

¹Hitachi Research Lab., Hitachi Ltd. (Japan), ²Inst. of Multidisciplinary Research for Advanced Materials, Tohoku University (Japan), ³Bio-Nano Electronics Research Center, Toyo University (Japan)

10:15-10:30

Straining Graphene by CVD On Cu And Magnetotransport On Large Scale Graphene

V. Yu, E. Whiteway, J. Maassen, M. Hilke,

McGill University, Center for the Physics of Materials (Canada)

10.30-11.00

Coffee break

Flexible and Nano-Electro-Mechanical Devices (11:00-12:30)

Chair: K.S. Novoselov

Manchester University (UK)

11:00-11:30

(Invited) Graphene Film for Flexible and Stretchable Electronics

J.H. Ahn,

Sungkyunkwan University (Korea)

11:30-11:45

Graphene Xylophone

H.S. Kim

Division of Quantum Phases and Devices, School of Physics, Konkuk University (Korea)

11:45-12:00

Electrically Switchable, Flexible Smart Windows Using Graphene-based Transparent Conductors

T. Hasan, A. Dyadyusha, Z. Sun, F. Bonaccorso, F. Torrissi, W. Richards, T. Kulmala, W. Wu, D. Chu, A.C. Ferrari,

Department of Engineering, University of Cambridge (UK)

12:00-12:30

(Invited) Graphene NEMS: Direct Readout and Magnetometry

V. Deshpande, J. Hone

Columbia University (USA)

12.30-15.00 Lunch + Poster Session II (The Bowling Green, Pembroke College)

Optoelectronics and Spectroscopy (15:00-16:45)

Chair: A.C. Ferrari

University of Cambridge (UK)

15:00-15:15

Characterizing Devices and Twisted Layers of Graphene by Resonance Raman Scattering

M.A. Pimenta, A. Righi, S. Costa, D. Mafra, A. Coimbra, L. Moura, E. Moujaes, C. Fantini, H. Chacham, R. Nunes,

Departamento de Fisica – Universidade Federal de Minas Gerais (Brazil)

15:15-15:30

Spectroscopic Characterization of Atomically Precise Graphene Nanoribbons

Y. Hernandez¹, H. Yang², C. Thiele³, F. Pereira¹, D. Donadio¹, X. Feng¹, C. Casiraghi^{2,4}, R. Krupke³, K. Müllen¹,

¹Max Planck Institute for Polymer Research (Germany), ²Department of Physics, Free University Berlin (Germany), ³Institute for Nanotechnology, Karlsruhe Institute for Technology (Germany) , ⁴School of Chemistry and Photon Science Institute, Manchester University (UK)

15:30-15:45

Wideband Tunable, High-power Ultrafast Lasers Mode-locked By Graphene

Z. Sun¹, H. Yu², D. Popa¹, X. Lin², T. Hasan¹, F. Torrisi¹, L. Zhang², W. Hou², J. Li², A.C. Ferrari¹,

¹Department of Engineering, University of Cambridge (UK), ²Institute of Semiconductors, Chinese Academy of Sciences (China)

15:45-16:00

Graphene Bubble as Adaptive Focus Lens

T. Georgiou¹, J. Zabel², C. Casiraghi^{2,3}, K.S. Novoselov¹,

¹School of Physics and Astronomy, University of Manchester (UK), ²Physics Department, Free University (Germany), ³School of Chemistry and Photon Science Institute, University of Manchester (UK)

16:00-16:15

Electron Emission from Free-Standing Graphene Edge

J. Tsai, T. Chu

Graduate Institute of Electro-Optical Engineering, Tatung University (Taiwan)

16:15-16:30

Microwave Impedance Measurements of Graphene and Graphene Oxide

L. Hao¹, J. Gallop¹, M. Mattevi², N. Klein², L. Cohen²

¹National Physical Laboratory (UK), ²Imperial College (UK)

16:30-16:45

Threshold Behavior of Stimulated Terahertz Emission from Optically Pumped Graphene

A. Satou^{1,2}, S. Boubanga-Tombet¹, V. Ryzhii^{2,3}, T. Otsuji^{1,2},

¹Tohoku University (Japan), ²Japan Science and Technology (Japan) Agency, ³University of Aizu (Japan)

16:45-17:00

Plasmonic Enhanced Graphene Photodetector

T.J. Echtermeyer¹, L. Britnell², S. Milana¹, A. Lombardo¹, R. Gorbachev³, A. Grigorenko²,
A. Geim³, K.S. Novoselov², A.C. Ferrari¹,

¹Department of Engineering, University of Cambridge (UK), ²School of Physics & Astronomy, University of Manchester (UK), ³Centre for Mesoscience & Nanotechnology, University of Manchester (UK)

17:00-17:30

Round Table Discussion: A Vision for Graphene 2023

Moderator: K.S. Novoselov

Manchester University (UK)