ICN2 Institut Català de Nanociència i Nanotecnologia

SEMINAR

FROM GRAPHENE QUANTUM DOTS AT ROOM TEMPERATURE TO GRAPHENE METAL BASE TRANSISTORS

Dr. Amelia Barreiro - *Columbia University, Dep.. of Physics, New York, U.S.A*

In the first part of the talk, I will present graphene quantum dots endowed with addition energies as large as 1.6 eV, fabricated by the controlled rupture of a graphene sheet subjected to a large electron current in air [1]. The size of the quantum dot islands is estimated to lie in the 1 nm range. The ultra-large addition energies allow for Coulomb blockade at room temperature, with possible application to single-electron devices.

In the second part of the talk, I will report on graphene/MoS2 /graphene co-laminated heterojunctions that are fabricated using a micromechanical manipulation technique [2]. In order not to mask the transport properties of the heterojunctions, ohmic contact resistances to the MoS2 are established and we are able to access the intrinsic transport properties of the heterojunctions and form Schottky diodes at the interface of the two layered materials. I will discuss the implications of the stacked heterojunction geometry to build novel graphene metal base transistors.

[1] A. Barreiro, H. S. J. van der Zant, L. M. K. Vandersypen:
Graphene quantum dots at room temperature, Nano Letters 12 (2012) 6096-6100.
[2] A. Barreiro, C. Lee, I. Meric, L. Wang, J. Hone, K. Shephard, P. Kim:
Work in progress

REMEMBER

Dr. AMELIA BARREIRO
From graphene quantum dots at room temperature to graphene metal base transistors

May 30, 2013 – 12:00h
Place: ICN2 Seminar Hall, ICN2 Building, UAB
Invited by: Prof. Pablo Ordejón

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Supported by: Institució CERCA Centres de Recerca de Catalunya · Generalitat de Catalunya · CSIC Consejo Superior de Investigaciones Científicas · UAB Universitat Autònoma de Barcelona