

## MULTIWALLED CARBON NANOTUBES-GRAPHITE SHEETS CONTACT RESISTANCE

Miriam Moreno-Moreno, Andrés Castellano-Gómez, Nicolás Agrait,  
and Julio Gómez-Herrero

Dpto. Física de la Materia Condensada,  
Facultad de Ciencias. Universidad Autónoma de Madrid  
Madrid 28049, Spain

[julio.gomez@uam.es](mailto:julio.gomez@uam.es)

In this work we study the electrical contact resistance between multiwalled carbon nanotubes MWNT and graphite sheets composed of a few graphene layers that partially cover the nanotubes. The contact resistance is compared with the one obtained with the gold electrodes for both the graphite sheets and the MWNT. The studies are performed using a conductance atomic force microscope<sup>1</sup> from Nanotec Electrónica. The tips are covered with gold-palladium and used as a second mobile electrode. The experiments show very low contact resistance with the graphite sheets ( $\sim 4$  k $\Omega$ ). For the case of the MWNT the contact resistance with the gold and graphite sheets depends on the particular type of nanotube. Remarkably, the contact resistance of nanotubes and graphite sheets does not depend on the SWNT length in contact with the graphite thin layers.

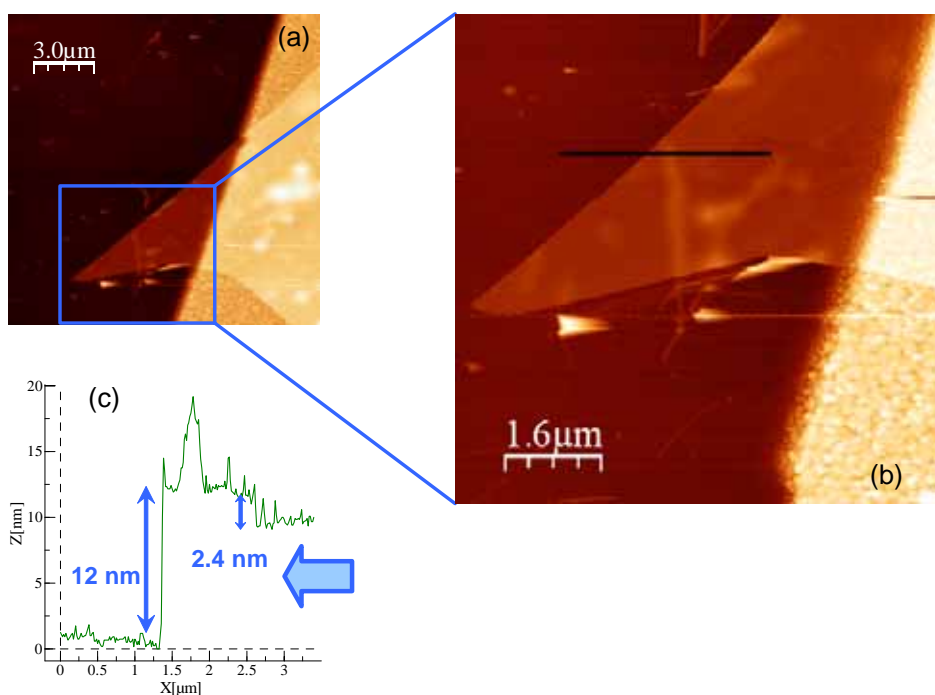


Figure (a) Long range area showing the oxide silicon substrate, the graphite sheets, MWNT and the gold edge. (b) Zoom in the graphite-gold border region in figure (a). Profile taken along the thick black line in figure (b)

<sup>1</sup> I. Horcas, R. Fernández, J. M. Gómez-Rodríguez, J. Colchero, J. Gómez-Herrero, and A. M. Baró, Rev. Sci. Instrum. **78**, 013705 (2007).