On January 2000, Prof. Maria Antonia Herrero Chamorro began her PhD (supported by JCCM, 2 years grant + 2 years contract) in the Microwave and Sustainable Chemistry group of UCLM, working on microwave-assisted organic reactions under the supervision of Prof. Angel Diaz Ortiz. Her first predoctoral stay was on the field of NMR under the supervision of Prof. T. Claridge, at the University of Oxford. One part of the thesis was performed in a short period of time in Uppsala (Sweden) with the Dr. M. Larhed. Enclosed on the terms of her thesis, two important collaborations were executed: one with the group of Prof. F. Cossío and the other one with the pharmaceutical company Janssen Cilag, S.A. In February 2006, she obtained the European PhD degree by the UCLM. Her first postdoctoral stay (granted by JCCM) was performed on the University of Graz (Austria) under the supervision of Prof. O. Kappe with the aim of the achievement of a comprehensive and well-design study of the "microwave effect" (published a JOC paper, highly cited). Her second Postdoctoral stay (granted by JCCM) was performed under the supervision of Prof. M. Prato at the University of Trieste on the design of new nanomaterials for application in medicinal chemistry and/or material science. During this second postdoctoral stay, she maintained an active colaboration with the MSOC Nanochemistry group in the UCLM and once she had ended this postdoctoral stay, she joined this group, which uses microwave radiations for the activation of carbon nanostructures in solvent-free conditions, preparing multifunctional derivatives that can serve as versatile synthons in materials science and biological applications. She has authored over 43 scientific publications (H=23), some book chapters and four scientific patents. She has participated in several international conferences with oral communications and poster presentations. In 2010 she received the award "women for science" by L'Oreal-UNESCO and in 2011 "Ibn Wafid de Toledo" Price for young researchers of Castilla-La Mancha. She was selected as "Ramon y Cajal" in 2010. She was promoted to Associate Professor in 2011. Recently, she obtained funding as principal researcher for the integration of carbon nanomaterials in solar cells and the design of new SERS systems based on CNHs by Iberdrola Fundation and the "Excma. Diputacion de Ciudad Real", respectively. She is also involved in the prestigious Graphene European Project granted to the MSOC Nanochemistry group.

¿Qué podemos hacer con NANOmateriales en un mundo MACROScópico?

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Hoy en día existe un elevado número de diferentes tipos de nanomateriales de carbono bajo estudio para la mejora de sus propiedades, aumento de la solubilidad y el anclaje de la molécula deseada…. En definitiva, para modular el sistema con el objetivo de poder aplicarlo en cualquier campo. Los Nanohorns de carbono[1] (CNHs) son estructuras tubulares (similares en estructura a los Nanotubos de carbono de una sola capa) con punta cónica. Los Nanohorns individuales forman clusters con una forma globular y un diámetro de entre 80 y 100 nanometros. Las tubos individuales se colocan desde el centro en forma de flor y dejando las puntas colocadas en todas direcciones. La alta pureza y la falta de partículas metálicas es una de las mayores ventajas comparado con los

nanotubos de carbono. Por otro lado, los quantum dots de grafeno[2] (GQDs) tienen un tamaño manométrico con propiedades fotoluminiscentres debido al confinamiento quántico y los efectos de borde.
Durante esta presentación quiero mostrar las diferentes estrategias sintéticas que hemos diseñado para la modificación de los nanohorns de carbono y la síntesis de los quantum dots de grafeno. También realizaré una revisión de las aplicaciones más interesantes que tienen este tipo de materiales. De igual forma veremos cómo podemos usar las ventajas que presentan los materiales a escala nanometrica en sistemas MACRO y como diseñamos y sintetizamos estos híbridos para la obtención de sistemas que podemos tocar y transportar.

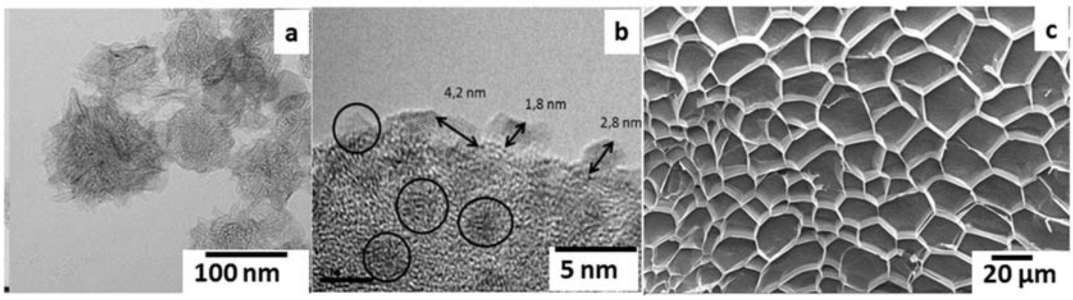

Figure 1. 1a CNHs, 1b, GQDs 1c Composite Hydrogeles/GQDots

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