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Conferencia:

Anticancer applications of versatile materials based on Metallodrug-functionalized nanostructured systems

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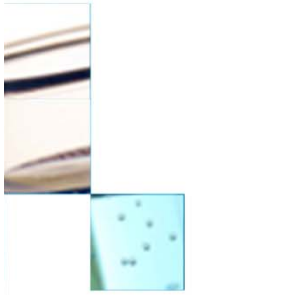

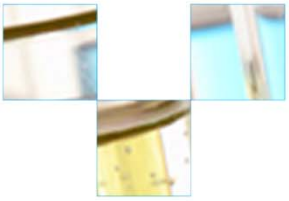

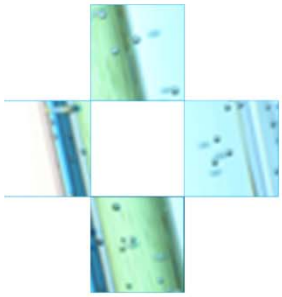

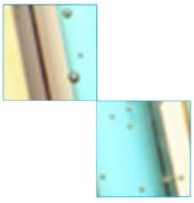

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Anticancer applications of versatile materials based on Metallodrug-functionalized nanostructured systems

Santiago Gómez-Ruiz

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In recent years, metal-based drugs have extensively been used in preclinical and clinical trials in anticancer therapies. However, most of these compounds present limitations for their potential use in humans, due to their high toxicity, low solubility in water, poor biodistribution and enigmatic pharmacokinetic behaviour.[1] One of the most interesting alternatives for the enhancement of the applicability of metal-based drugs in humans is focused on the encapsulation, protection or formulation of metallodrugs in different nanostructured systems, to improve their biological activity and selectivity in cancer therapies.[2]

In this context, our research group COMET-NANO from Rey Juan Carlos University in Spain is working for more than 10 years on the use of nanostructured porous materials (Figure 1) with different composition, morphology, pore size and particle size functionalized with different ligands and/or metallodrugs. These nanostructured systems have shown a very promising behaviour for different therapeutic applications.[3]

Thus, this presentation will be focused on the most recent investigations of our group with special attention to novel systems based on metal complexes of titanium, tin or copper containing both imaging and targeting agents for the selective activity against specific tumours.

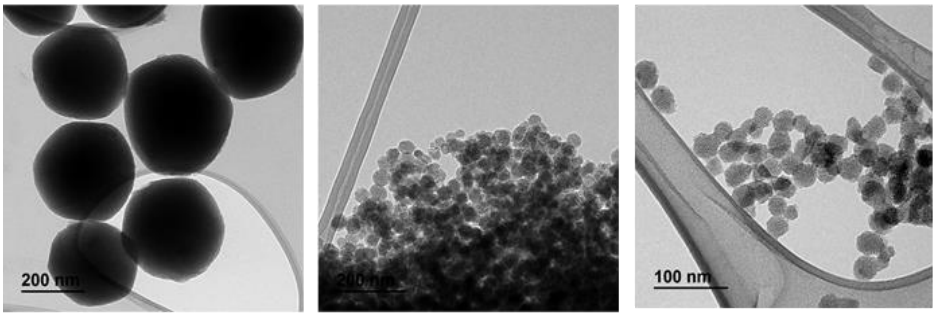

Figure 1. Some of the studied metallodrug-functionalized nanostructured materials.

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[1] K.D. Mjos, C. Orvig, *Chem. Rev.*, **2014**, *114*, 4540-4563.

[2] W. Wani, S. Shreaz, S. Prashar, S. Gómez-Ruiz, *Coord. Chem. Rev.*, **2016**, *312*, 67-98.

[3] See for example the latest papers: a) D. Díaz-García, D. Cenariu, Y. Pérez, P. Cruz, I. del Hierro, S. Prashar, E. Fischer-Fodor, S. Gómez-Ruiz, *Dalton Trans.,* **2018**, *47*, 12284-12299; b) R. S. Erami, K. Ovejero, S. Meghdadi, M. Filice, M. Amirnasr, A. Rodríguez-Diéguez, M. U. de la Orden, S. Gómez-Ruiz, *Nanomaterials*, **2018**, *8*, 434; c) Y. Ellahioui, M. Patra, C. Mari, R. Kaabi, J. Karges, G. Gasser, S. Gómez-Ruiz, *Dalton Trans.*, **2019**, *48*, 5940-5951.

Short Bio – Dr. Santiago Gómez-Ruiz

Santiago Gómez-Ruiz (1978, Toledo, Spain) received his **B.Sc. in Chemistry from the Universidad de Castilla La Mancha (Spain)** (1996-2001). Then, he joined the **Rey Juan Carlos University as Assistant Professor** (Profesor Ayudante de Escuela Universitaria) of Inorganic Chemistry.

In 2003, he spent **three months in the laboratory of Prof. Hey-Hawkins at Leipzig University (Germany) as "Marie Curie Training Site Fellow",** and in **December 2004, he finished his Ph.D. thesis** focused on the synthesis and catalytic properties of novel metallocene complexes with the **highest qualification ("Summa Cum Laude") and the European Diploma.**

He was awarded a **new position in the URJC (Profesor Ayudante Doctor) in 2005** and he worked in a project for knowledge transfer with the petroleum company Repsol on the preparation of novel metallocenes with catalytic applications. Subsequently, **in 2006 he obtained one of the most prestigious postdoctoral research fellowship from the renowned Alexander Von Humboldt Foundation** (2006-2007). During that time he worked in the field of P-Chemistry at Leipzig University (Germany).

In **December 2007 he was appointed as Associate Professor** (Profesor Contratado Doctor) and back to his University (URJC) he decided to **begin a new research topic based on the design and preparation of novel metallodrugs and nanostructured materials with biological applications against cancer**. In **August 2009 he was awarded as Lecturer of Inorganic Chemistry (Profesor Titular de Universidad) at the Rey Juan Carlos University**.

Starting from 2001, he has published over 140 research papers, has participated in 18 research projects and has been **principal investigator of 2 research projects from Retos-Investigación Program and from a competitive Exchange Research Project with University of Leipzig funded by DAAD.** In addition, since 2012, he has been **principal investigator of various research projects for knowledge transfer with the American Company Chevron Phillips Chemical.**

He has also supervised 2 PhD students (with 4 PhD thesis working now) and 6 master students and he collaborates with several groups worldwide