



Departamento de
Física de la
Materia Condensada
Universidad Zaragoza

SEMINARIOS 2020

Andrés Castellanos-Gómez

Instituto de Ciencia de Materiales de Madrid (CSIC)

“2D semiconductors for optoelectronic and straintronics”

In this seminar I will give a tutorial on 2D semiconducting materials and I will motivate their interest in optoelectronic and straintronic applications. The first half of the talk will be devoted to provide a general background about 2D materials: why to study them, how to fabricate them, how to handle them, how to fabricate devices out of them, etc. In the last part of the talk I will explain how 2D semiconductors are very appealing because of their optoelectronic properties and how the combination between these optoelectronic properties and their unique mechanical properties makes them extremely interesting for the emerging field of straintronics. Strain engineering is an interesting strategy to tune a material's electronic properties by subjecting its lattice to a mechanical deformation. Conventional straining approaches, used for 3D materials are typically limited to strains lower than 2% in most cases due to the low maximum strains sustained by brittle bulk semiconducting materials. 2D materials can be literally stretched, folded, bent or even pierced. This outstanding stretchability (and the possibility of using dynamically varying strain) of 2D materials promises to revolutionize the field of strain engineering and could lead to "straintronic" devices – devices with electronic and optical properties that are engineered through the introduction of mechanical deformations.

Dr. Andres Castellanos-Gomez is a Tenured Scientist in the Spanish National Research Council (CSIC). He explores novel 2D materials and studies their mechanical, electrical and optical properties with special interest on the application of these materials in nanomechanical and optoelectronic devices. He was awarded an ERC Starting Grant in 2017 and has been included in the Highly Cited Researchers 2018 list of Clarivate/WOS and selected as one of the Top Ten Spanish Talents of 2017 by the MIT Technology Reviews. He has been also recognized with the Young Researcher Award (experimental physics) of the Royal Physical Society of Spain (2016).

28 de Febrero (viernes)

Con la colaboración de:



**LUGAR: SALA DE GRADOS DE LA
FACULTAD DE CIENCIAS**

HORA: 12:30