



CRC Seminar Series

DATE: 10 June 2021
TIME: 3:00 PM – 5:00 PM
LOC: Online Zoom Meeting



GUEST SPEAKER:

Dr. Andrés Castellanos-Gómez

The Materials Science Institute of Madrid (ICMM) - Spain

TITLE:

"Drawing circuits on paper with van der Waals materials"

ABSTRACT:

A big chunk of the price tag of electronic components is due to the cost of silicon wafer substrates. Although silicon is a highly abundant and cheap element, the transformation and processing from the raw material into high quality silicon wafers results very costly. In fact, the cost of silicon substrates constitutes $\sim 1/3$ rd of the total cost of a memory chip and about $\sim 1/10$ th of the cost of a high-end state of the art micro-processor. The societal, industrial and technological demands of ultra-low-cost electronic components has spurred the quests towards lower cost substrates. This has motivated a surge of works on paper-based electronics in the last years. In fact, paper substrates cost (~ 0.1 €/m²) is orders of magnitude lower than that of polymer substrates (PET ~ 2 €/m² and PI ~ 30 €/m²) and crystalline silicon (~ 1000 €/m²).

Despite the promises of paper-based electronics, there are several challenges to be solved. One of the major challenges is that the rough, fiber-based structure of paper makes it impossible to fabricate devices using conventional lithographic techniques. In this talk I will discuss our last works to integrate different van der Waals materials onto standard paper substrates.

PROFILE OF DR ANDRES GOMEZ-CASTELLANOS:

Dr. Andres Castellanos-Gomez is a Tenured Scientist in the Spanish National Research Council (Consejo Superior de Investigaciones Científicas, 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 is author of ~140 articles in international peer review journals and 6 book chapters. He was awarded an ERC Starting Grant in 2017 and has been appointed Fellow of the International Association of Advanced Materials (IAAM) in 2020, has been included in the Emerging Leaders 2020 special issue of the Journal of Physics: Materials, included in the Highly Cited Researchers 2018, 2019 and 2020 lists of Clarivate/WOS, selected as one of the 2018 Emerging Investigators by Chemical Society Reviews 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).