FLEET
ARC CENTRE OF EXCELLENCE IN FUTURE LOW-ENERGY ELECTRONICS TECHNOLOGIES

FLEET RESEARCH SEMINAR

Electronic properties and SPM characterization of transition metal dichalcogenides

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Abstract: In this talk I will present my recent work on the electronic properties and SPM characterization of transition metal dichalcogenides (TMDs) and their lateral heterostructures, based on Density Functional Theory simulations. In particular, I will review some results regarding the STM and AFM characterization of several point-like defects in freestanding MoS2; the impact of Ir(111) and Au(111) substrates on the STM imaging of such defects, as confirmed by experimental evidence; their potential applications as gas sensors; and our preliminary work on the lateral WS2-WSe2 heterostructure, which points to the presence of extended electronic states at the interface.

About the Speaker: ***Dr Blanca Biel*** received her Ph.D. in Physics at the Universidad Autónoma de Madrid in 2006. After a two-year postdoctoral stay at CEA-LETI in Grenoble she joined the University of Granada, where she is a Research Fellow at the Department of Atomic, Molecular and Nuclear Physics.

Dr. Biel's research interests include the study of the electronic and quantum transport properties of one-and two- dimensional materials by means of combined atomistic and quantum transport simulation tools. In particular, her work focuses on the impact of disorder at the atomic scale in this systems, such as atomic vacancies or dopants, and on the simulation, by first-principles methods, of the Scanning Probe Microscopy (STM and AFM) characterization of these defects.

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