

Seminar

of the Department of complex matter F7

Thursday, 28.3.2019 at 13:00,
Seminar room F7**Fabrication of thin film transistors and energy storage devices from liquid phase exfoliated nanosheets****Dr. Victor Vega-Mayoral*****CRANN & AMBER research centers, Trinity College Dublin***
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Transition metal dichalcogenides has been one of the most promising family of materials for a lustrum. Strong light matter interaction and high mobilities when exfoliated down to the monolayer. Liquid phase exfoliation produces dispersions of few-layer TMDCs. Due to the liquid nature of the final sample it is possible to print or spray these dispersions to produce thin films of 2d flakes. We will talk about the fabrication of transistors and energy storage devices.

TiS₂ is a promising material for energy storage devices. Its application has been reduced due to a fast degradation in open atmosphere. Our latest results proofs how degradation can be avoided by carefully choosing the solvent. We have fabricated stable batteries with high cyclability and capacities close to the theoretical value.

Mixed networks of conducting and non-conducting nanoparticles show promise in a range of applications where fast charge transport is important. While the dependence of network conductivity on the conductive mass fraction (M_f) is well understood, little is known about the M_f -dependence of mobility and carrier density. I will show here a detailed characterization of thin film transistors as a function of the WS₂-graphene M_f . Here, we use electrolytic gating to investigate the transport properties of spray-coated composite networks of graphene and WS₂ nanosheets.

The lecture will be held in English.

Cordially invited to attend.

