

Internal Seminar

Engineered Atomic Layers for Photo-Electrocatalytic Applications

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New layered solids by the combinatorial stacking of different atomic layers [two-dimensional layers (2D)] are emanating as novel candidates for energy efficient devices. Engineering the stacking sequence of these materials provides a unique opportunity to tailor-make solids for various applications, and hence this topic paves new dimension in 2D materials' research. Further, interface induced properties from these sequentially stacked solids can give birth for new phonon-phonon coupling, large solid light interactions, new adsorption centers for catalysis, modification in the band structure etc. In this talk, the van der Waals stacking sequence dependent visible light photo-electrocatalytic activities of CVD grown large area graphene and mono/a few layered MoS₂ will be discussed. Furthermore, strain and temperature dependent strong excitonic coupling between graphene and MoS₂ is established from Resonance Raman and photoluminescence (PL) measurements. The theoretical background of the observed phenomena will also be presented. Further, recent results on controlled growth and characterization of large area CVD grown fluorinated graphene will be presented, which has a high demand for super-hydrophobic coatings and high- k dielectrics for 2D atomic layers.

Monday, Jan 23rd 2017

2:00 PM (Tea/Coffee at 1:45 PM)

Seminar Hall, TCIS