



School of Nano Science
Institute for research in fundamental Sciences

Special Seminar

2D-layers as a growth platform for materials with reduced dimensionality

Invited Speaker:

Prof. Thomas Michely

Physikalisches Institut, Universität zu Köln

Abstract:

2D-layers, like graphene or a monolayer of hexagonal boron nitride (h-BN), enable the creation of new materials, unforeseen reaction pathways or striking confinement effects. Three examples for this statement are given. (i) Room temperature metal deposition on a 2D-layer moiré with an Ir(111) substrate results in the formation of a regular array of clusters with a narrow size distribution and high thermal stability. Such regular arrays objects may be of great use for applications in nanocatalysis and nanomagnetism. (ii) The inertness of 2D-layers together with the confinement of the diffusion for the supplied reactands to two dimensions enables new reaction pathways in organo-metallic chemistry. As an example, it is shown how graphene and h-BN enable the growth of Europium-cyclooctatetraene sandwich molecular nanowires of micrometer length through supply of atomic Eu and cyclooctatetraene molecules under well-defined ultrahigh vacuum conditions. (iii) Transition metal dichalcogenide monolayers may be grown in very high quality through van der Waals epitaxy using graphene on Ir(111). The nearly perfect decoupling of the layers from their substrate enables the observation of exciting new phenomena.

Tuesday, 16 Bahman 1397 (February 5, 2019), 14:00-15:00

Conference Hall, Farmanieh Building, IPM