

Internal Seminar

Graphene-MoS₂ Heterostructures as Potential Sensing Platforms

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Development of van der Waals (vdW) heterostructures of two dimensional (2D) atomic layers via stacking open new avenues in the development of advanced functional materials. On the other hand, atomically thin layers of transition metal dichalcogenides (TMDs) such as MoS₂ are highly researched towards their applications in small molecule sensing.^[1] But recently their stability in harsh electrochemical conditions is highly questioned and it is proven that most of the TMD structures are not structurally stable.^[2] With this in mind, we design novel heterostructures of graphene and MoS₂ with graphene covered on MoS₂ as a possible electrochemical sensing platform. Small molecules such as dopamine and ascorbic acid are attempted to sense using this sensing platform and an electrochemical sensing approach is used for the study. The results show that such heterostructures can not only enhance the stability of the sensing platform but also can enhance the sensitivity of the sensing platform. The results will be discussed during the talk.

Reference:

1. T. N. Narayanan, Chiranjeevi S R Vusa, S. Alwarappan, Nanotechnology 25 (2014) 335702.
2. Z. Wang, X. Xiang, J. A. Hachtel, A. Apte, C. S. Tiwari, R. Vajtai, J. C. Idrobo, R. Ozturk, P. Ajayan, Nanoscale Horizons 4 (2019) 689.

Thursday, Feb 20th 2020

4:00 PM (Tea/Coffee at 3:30 PM)

Seminar Hall, TIFR-H