

## **Colloquium**

### **Engineered growth of two-dimensional transition metal dichalcogenides for electronic and optoelectronic application**

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Atomically thin semiconducting two-dimensional transition metal dichalcogenides (TMDs) attracted significant research interest recently due to their applicability in high-performance electronic and optoelectronic devices. To enable these applications and to drive 2D semiconductors towards commercial implementation, it is important to develop large-area growth methods with control over the material quality, composition and defect density. In this presentation, I will give an overview of our recent research efforts in the direction of scalable synthesis, characterisation, engineering and device applications of semiconducting TMDs, including high-quality single crystals, TMD<sub>1</sub>-TMD<sub>2</sub> lateral heterostructures and Janus TMDs. I will demonstrate their applicability in various atomically thin device applications including high responsivity phototransistors, rectifiers, photovoltaic devices, photonic devices, optical fibre based devices and electroluminescent light emitters.

***Monday, Jul 24<sup>th</sup> 2023***

***4:00 PM (Tea / Coffee 03.45 PM)***

***Auditorium, TIFR-H***