



## SCDT – FlexE Centre Webinar Series

*The webinars aim to bring together researchers in Flexible Electronics and allied areas from across India (and other countries) on a single platform to promote professional interaction.*

### Webinar by



#### Dr. Saptarshi Das

Department of Engineering Science and Mechanics, The Pennsylvania State University, University Park, PA, USA

on  
“Two-Dimensional Materials and Devices: From Atomic-Scale Engineering to Intelligent Electronics”

**Date:** 11<sup>th</sup> August 2026

**Time:** 7:30 PM to 8:30 PM

Visit [www.iitk.ac.in/scdt/webinars.html](http://www.iitk.ac.in/scdt/webinars.html) to access the zoom link to join the webinar.

The event will be chaired by

#### Dr. Prashant Kumar

University of Petroleum and Energy Studies (UPES), Dehradun

## Abstract of the Webinar

Two-dimensional materials offer unique opportunities to rethink electronic devices and systems beyond conventional scaling. In this talk, I will discuss our recent efforts in engineering 2D materials, interfaces, contacts, and heterostructures for advanced logic, memory, sensing, and neuromorphic computing. I will highlight our work on large-scale 2D CMOS, monolithic 3D heterogeneous integration, self-powered sensing and processing, and emerging device concepts enabled by ionics and charge trapping. I will also discuss recent developments in atomically thin crystalline hard masks for high-aspect-ratio nanofabrication. Finally, I will share some perspectives on the opportunities and challenges in translating these materials and devices into future computing and sensing systems.

## Information about the speaker

Saptarshi Das is the Ackley Professor of Engineering Science and Professor of Engineering Science and Mechanics at Penn State, with affiliations in Electrical Engineering and Computer Science and Materials Science and Engineering. He received his Ph.D. from Purdue University and subsequently worked at Argonne National Laboratory before joining Penn State. His research focuses on two-dimensional materials and devices for advanced electronics, sensing, neuromorphic computing, and heterogeneous integration. His work has appeared in journals including Nature, Nature Materials, Nature Electronics, Nature Nanotechnology, and Nature Sensors. He is a recipient of the NSF CAREER Award, AFOSR Young Investigator Award, and several Penn State research and teaching awards.