



# *Aamer Mahmood*

Director

West Virginia University

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10:00 AM • MSEE 112

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## **Leadership in semiconductors: Leveraging experience for future growth**

**Abstract:** With the enactment of the CHIPS Act in late 2022, a pivotal moment emerged for the revitalization of the US semiconductor industry. Yet, a critical hurdle looms large: the shortage of skilled workers necessary to bridge the gap in local chip production. Across the nation, universities are mobilizing to confront this challenge head-on, endeavoring to cultivate a robust semiconductor processing workforce in record time.

This presentation draws upon the presenter's tenure as the first Process Scientist at Purdue University's Birck Nanotechnology Center, highlighting fruitful research collaborations that yielded remarkable outcomes. These partnerships yielded advancements in microsystems and characterization capabilities, unlocking possibilities for groundbreaking applications. Notable achievements include the development of implantable sensors for monitoring sympathetic nervous activity, application-specific microfluidic devices, and cutting-edge temperature sensors enabling in-situ measurements.

Against the backdrop of heightened emphasis on US-based semiconductor technologies, the discussion culminates with an exploration of the presenter's forward-looking vision for nurturing a dynamic semiconductor processing workforce.

## **Chemical Vapor Deposition**

**Abstract:** Semiconductor processing consists of various additive and subtractive processes to realize functional micro and nano systems. Different thin film deposition techniques will be discussed followed by a more detailed examination of chemical vapor deposition techniques. Conformality of CVD films over non-planar topographies will be discussed as will other parameters like growth rate, uniformity of coverage and, effect of temperature on growth rate. The talk will conclude with an overview of various types of CVD and associated optical, mechanical and electrical properties of deposited films.

**Bio:** Dr. Aamer Mahmood is the Director of the West Virginia University Shared Research Facilities (WVU SRF). Working with the WVU Research Office and researchers from various entities and departments in the University, he is responsible for operations as well as the strategic growth of the SRF. Dr. Mahmood has a BS, an MS and a PhD in electrical engineering. His graduate research at the University of Texas at Arlington was on the development of device-level vacuum-packaged infrared sensors on flexible substrates. After graduation in 2006, he worked as a post-doctoral researcher on the development of large deflection MEMS actuators at the school of electrical and computer engineering at Purdue University before joining the Birck Nanotechnology Center as a Research Engineer. He rose to the rank of a Scientist and then Senior Process Scientist at Birck before proceeding to Doha, Qatar, as a Senior Scientist in the Qatar Foundation in 2015. Upon returning to the US in 2020, he had a short stint with Microsoft Station Q Purdue as a nanofabrication engineer before taking up his current position at West Virginia University. His professional experience spans microsystems design and development, semiconductor processing/nanofabrication and associated metrology, planning, commissioning and operation of inter-disciplinary research facilities as well as technical and operational leadership of such facilities.

**Host:** Professor David Janes, [janes@purdue.edu](mailto:janes@purdue.edu), 765-494-9263



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