Department of Mechanical and Aerospace Engineering
Indian Institute of Technology Hyderabad
Kandi - 502285, Sangareddy, Telangana, India

MAE Seminar Series | Lecture 18

Title: Laser-based inspection for next generation semiconductor manufacturing

Speaker: Dr. Vasudevan Iyer

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Abstract | The advent of nanotechnology has revolutionized the continuous miniaturization of everyday electronic devices. As we engineer new nanomaterials for applications like solar cells and transistors, a detailed understanding of their optical, electronic, and thermal properties becomes crucial. In this context, optical inspection methods offer an ideal suite of techniques to characterize sensitive materials. In this talk, the speaker will describe laser-based inspection techniques and delve into both the fundamental and applied levels by taking examples from the fascinating class of 2D Van der Waals materials. These materials have garnered significant attention due to their remarkable properties that are ordinarily inaccessible in bulk materials. As we move toward large-scale manufacturing using novel nanomaterials, it will be essential to combine inspection methods with automation, optimization, and artificial intelligence. These technologies will streamline production processes and ensure consistent quality. The speaker will comment on recent developments in these areas and conclude with exciting prospects for the coming decade.

About the Speaker | Dr. Vasudevan Iyer obtained his B.Tech (Hons) in Mechanical Engineering from IIT Madras in 2014 and subsequently received his Ph.D. from Purdue University, USA in 2020, specializing in the study of energy transport in low-dimensional semiconductor materials. He went on to do postdoctoral research at Oak Ridge National Laboratory, USA, where he investigated photonic nanostructures and solar cell materials for US Department of Energy sponsored projects. His expertise includes laser inspection and metrology, femtosecond spectroscopy and electron beam microscopy. Currently, he is working at KLA Corporation, USA, in the LS-SWIFT division (Laser Scanning-Simultaneous Wafer Inspection at Fast Throughput), where he is involved with integration of high-power UV lasers for nanometer scale defect inspection in semiconductor chips. He has authored 20 articles in leading international journals such as Physical Review Letters and Nature Communications.

Date: 02/08/2024
Time: 11:00 Hrs.