EIPBN Invited Talk - 2024

Metrology driven data intelligence for research and productization of smart glasses and AR technology.

Abstract:

In this invited talk, the latest advancements in metrology, inspection, characterization and performance evaluation for smart glass and AR display research and productization will be discussed. The presentation will cover a range of topics including advanced characterization techniques, novel inspection methods, and leading-edge metrology solutions. This will also include leveraging advanced machine learning and predictive analytics to extract valuable insights and intelligence to accelerate the development and scaling of AR & Smart Glass productization. Through real-world examples and case studies, we provide highlights of metrology engineering solutions (covering material & process metrology inspection solutions like bright field, dark field optical microscopy, interferometry, optical spectroscopy, atomic force microscopy, scanning electron microscopy, Mueller Scatterometry, destructive metrology & characterization methods like STEM/CLM/EDX) that can improve overall yield, gain insights on the process, materials, performance (leveraging novel Display Performance metrology - Image Quality, MTF, See-through quality) and further enable complex research, development and manufacturing of the next generation of photonic devices and provide a data driven framework for strategic road map evaluation.

Biography:

Dr. Raja Muthinti is a technology leader, strategist with over 15 years of experience delivering advanced metrology, characterization, inspection and yield enhancement solutions at the intersection of materials, optics, and nanotechnology. In 2019, he joined Facebook Research (now Meta Reality Labs) to lead Metrology Engineering for enabling the next generation of Augmented Reality (AR) and Smart Glasses (SG) path-finding research and productization. Along with management and technical leadership, as Senior Engineering Manager at Meta, he is currently focused on enablement of leading-edge material & process metrology, characterization, inspection and display optical performance test solutions for next generation of Smart glasses and AR products. Further, he is currently leveraging advanced AI, machine learning, predictive analytic modeling to enable novel scalable solutions providing critical intelligence through fusion with high quality metrology and display performance test data. Previously, as a Senior Optical Scientist & Metrology

Engineer at IBM Research, he focused on advanced semiconductor metrology R&D for enablement of beyond 7nm logic technology and advanced memory devices for cognitive & AI applications. As Senior technical leader, he successfully drove multiple Joint Development programs with industry partners, architected strategic road maps and was instrumental in enabling new methods, lab-to-fab solutions for 22nm, 14nm, 10nm nodes. He is a recipient of multiple awards at SPIE and AVS for his work on advanced Mueller Scatterometry and Optical Metrology. He is a senior member of SPIE and serves as committee member, active reviewer for AVS, SPIE & EIPBN international conferences. He has published over 40 peer-reviewed articles, numerous conference presentations and holds 32 Patents. Dr. Raja Muthinti obtained his Ph.D., in Nano-Engineering from College of Nanoscale Science & Engineering, State University of New York and his M.S., in Chemical Engineering from Clarkson University, New York.