Electrical & Computer ENGINEERING **SEMINAR**

Thursday, March 4
Scaife Hall Auditorium
Room 125
4:30 p.m.
Refreshments at 4:00 p.m.

Eric Johnson
Professor
University of North Carolina at Charlotte

Eric Johnson is a Professor of Optics and Electrical Engineering at the University of North Carolina at Charlotte and the Director of the Center for Optoelectronics and Optical Communications. Dr. Johnson also served as Program Director in the Electronics and Photonics Device Technologies group in the Electrical, Communications and Cyber Systems Division of the National Science Foundation.

Dr. Johnson's research spans the area of micro-optics and nano-photonics, with particular emphasis on active and passive photonic devices. Some of his major innovations include the development of methods for fabricating 3-Dimensional micro- and nano-optics, high power lasers, novel integrated fiber beam shaping devices utilizing multimode interference, sensors, fiber lasers, data communications, and passive optics for spectral and polarization filtering. He has over 130 publications in the field with 11 issued patents. Dr. Johnson was a recipient of NSF's CAREER Award and has been funded by DARPA, AFOSR, ONR, and numerous industrial organizations. He is a Fellow of OSA, SPIE, and a Senior Member of IEEE. Dr. Johnson has a PhD in Electrical Engineering from the University of Alabama at Huntsville, MS in Electrical Sciences from the University of Central Florida, and BS Physics from Purdue University.

Applications and Engineering of Three-Dimensional Optics

Diffractive and micro-optics have enabled a large number of applications in imaging, sensing, laser systems, and industrial machining. This is largely due to the development of single step lithography methods that can be easily incorporated into conventional integrated circuit fabrication facilities. As the technology has gained acceptance, novel applications on integrated functionality have driven the requirements from surface relief structures into more complex structures exploiting spatial, spectral, and polarization properties. In order to realize components with these unique aspects, one must concurrently engineer the fabrication process with the desired optical functionality; thereby, enabling one to create engineered 3D Meta-Optics for spatial, spectral, and polarization control. Some of the challenges involve the engineering of optical properties at the micro and the sub-wavelength scale. This talk will summarize the design and fabrication issues associated with wafer based methods of fabricating micro-optics and give practical examples of surface relief and 3D optics to illustrate their benefits in optical sources, advanced imaging, and sensing platforms.

ECE Seminar Hosts

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