

## GaN Technology, Umesh Mishra

AlGaN/GaN HEMTs are emerging as a preferred technology for a variety of applications ranging in frequency from microwave and mm-wave amplifiers down to high voltage power switching. These applications demand that devices have different designs as the trade-offs are application specific. In this workshop/short course, the evolution of device design will be addressed and the baseline device including SiN passivation and field plates for field mitigation will be discussed in detail. Devices for high voltage switching for switching power applications will then be discussed. These will include vertical device structures such as The Current Apertured Vertical Electron Transistor (CAVET). Lastly, new designs such as deep-recessed structures with reduced need for passivation will be discussed.



Professor Mishra joined ECE Department at the University of California, Santa Barbara in 1990 from the Department of Electrical and Computer Engineering at North Carolina State University. A recognized leader in the area of high-speed field effect transistors, Dr. Mishra has made major contributions at every laboratory and academic institution for which he has worked, including: Hughes Research Laboratories in Malibu, California; the University of Michigan at Ann Arbor; and General Electric, Syracuse, New York. His current research areas attempt to develop an understanding of novel materials and extend them into applications. He is the Director of the AFOSR PRET Center for Non-Stoichiometric Semiconductors and of the ONR MURI Center (IMPACT), which relates to the application of SiC and GaN based transistors for power amplification.