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Title: Nitride Semiconductors and Their Applications to UV Optoelectronic Devices

Abstract: Semiconductors based on gallium nitride (GaN) and its alloys with indium nitride (InN) have been extensively used over the past several years for the development of blue-green and white light emitting diodes (LEDs). Such devices have found widespread applications in outdoor and consumer electronic displays and are gradually replacing the incandescent and fluorescence lamps for general illumination. Furthermore, the development of blue-violet lasers has revolutionized the field of optical recording for information storage. On the other hand UV optoelectronic devices (LEDs, lasers, detectors, optical modulators) based on alloys of GaN and aluminum nitride (AlN) have not yet been developed to the degree required to address a number of important industrial, medical and security applications. Such include, for example, water purification, air / food sterilization, surface decontamination and sterilization of medical instruments, medical diagnostics at the point of care, identification of biological and chemical agents and free-space non-line of sight communication. In this talk I will review our work in this family of materials with a particular emphasis to UV optoelectronic devices and their applications.

Biography: Dr. Moustakas received his Ph.D. from Columbia University in 1974. He joined Boston University in 1987 as a Professor of Electrical and Computer Engineering. He is also a Professor of the Physics Department, the Division of Materials Science and Engineering and a member of the Photonics Center. Prior to joining Boston University he held research and visiting faculty positions at Harvard University, Princeton University, Massachusetts Institute of Technology, Aristotle University, IBM T. J. Watson Research Laboratory and Exxon Corporate Research Laboratory.

Dr. Moustakas' research contributions cover a broad spectrum of topics in opto-electronic materials and devices, including nitride semiconductors, amorphous semiconductors and diamond thin films. Intellectual property that resulted from his work has been licensed to a number of companies, including major manufactures of blue LEDs and lasers (Cree, Philips-LumiLeds, OSRAM and Nichia). His work is cited in the 2006 edition of *Technology Transfer Works: 100 Cases From Research to Realization*, published by the Association of University Technology Managers as part of the [Better World Project](http://www.betterworldproject.net) (www.betterworldproject.net).

Dr. Moustakas is a Fellow of the American Physical Society and the Electrochemical Society. In 2003 he was awarded an **honorary doctoral degree** from the Aristotle University for “*outstanding contributions to research and teaching*”. In 2010 he was awarded the **MBE Innovator Award** for “*pioneering contributions in the development of MBE growth of nitride materials and the development of nitride optoelectronic devices prepared by MBE*”. In 2011 he was awarded the **Distinguished Scholar Award** of the BU College of Engineering.