

IBS CINAP Seminar

June 10, 2019, 12:00PM

Room 86120 (N Center), Sungkyunkwan University, Suwon

Novel electronic and optical phenomena including physics of nanoplasmonic arrays, and solar materials

Prof. Rana Biswas

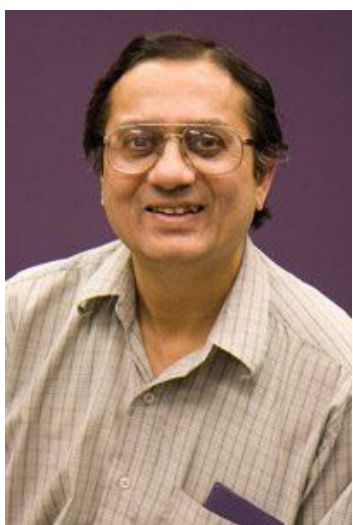
Iowa State University, Ames, Iowa USA

Abstract

The talk will focus on recent novel phenomena in nanoplasmonic arrays, from both theoretical and experimental perspectives. It will survey including extraordinary optical transmission and quantum dot emission enhancements induced by the nanostructure. In the area of solar materials, I will describe the work in light trapping to enhance solar cells, and related optical changes in organic films used for photovoltaic applications.

Refs: A. Peer and R. Biswas, Extraordinary Optical Transmission in Nanopatterned Ultrathin Metal Film without Holes, *Nanoscale* 8, 4657 - 4666 (2016). S. Shah, R. Biswas, T. Koschny, V. Dalal, Unusual Infrared Absorption Increases in Photo-degraded Organic Films, *Nanoscale* 9, 8665-8673 (2017).

Brief Bio



Prof. Rana Biswas did his PhD in Condensed Matter Physics from Cornell University in Ithaca, NY (in 1984). After that he was a postdoctoral member of staff at AT&T Bell Laboratories (Murray Hill, NJ), and a consultant with Exxon Research (Annandale, NJ). He then moved to Iowa State University and Ames Laboratory, where he is an Adjunct Professor with the Departments of Physics and Electrical & Computer Engineering and a Senior Scientist in the Ames Laboratory of the U.S. Dept. of Energy, and the Microelectronics Research Center. His research has spanned solar materials, thin film solar cells, nanoplasmonics, nanophotonics, and quantum materials. He has co-organized several symposia at the Spring Materials Research Society Meetings. He has supervised PhD students for their thesis research, and postdoctoral scholars from Iowa State U and published in *Nature* and high impact journals [1]. He directed several projects from the National Science Foundation, the Department of Energy and industrial sponsors (Triton, ICX, Microcontinuum,). He is a Fellow of the American Physical Society and a senior member of the IEEE.

[1] Google scholar: <https://scholar.google.com/citations?user=q3wSob8AAAAJ&hl=en>