

# Department of Physics

Condensed Matter Physics

Clarendon Laboratory, Parks Road, Oxford OX1 3PU



## CONDENSED MATTER SPECIAL SEMINAR

Thursday 23rd of November at 11am

### *“Semiconductor Nanowires for Optoelectronics Applications”*

**Prof Chennupati Jagadish**

Research School of Physics and Engineering, The Australian National University

Semiconductors have played an important role in the development of information and communications technology, solar cells, solid state lighting. Nanowires are considered as building blocks for the next generation electronics and optoelectronics. In this talk, I will introduce the importance of nanowires and their potential applications and discuss about how these nanowires can be synthesized and how the shape, size and composition of the nanowires influence their structural and optical properties. I will present results on axial and radial heterostructures and how one can engineer the optical properties to obtain high performance lasers, THz detectors and solar cells. Use of nanowires for artificial photosynthesis and engineering of neuronal networks will be discussed. Future prospects of the semiconductor nanowires will be discussed.

Professor Jagadish is a Distinguished Professor and Head of Semiconductor Optoelectronics and Nanotechnology Group in the Research School of Physics and Engineering, Australian National University. He has served as *Vice-President and Secretary Physical Sciences of the Australian Academy of Science* during 2012-2016. He is currently serving as President-Elect of IEEE Photonics Society and President of Australian Materials Research Society. Prof. Jagadish is an Editor/Associate editor of 6 Journals (EIC-Progress in Quantum Electronics), 3 book series and serves on editorial boards of 19 other journals. He has published more than 880 research papers (600 journal papers), holds 5 US patents, co-authored a book, co-edited 10 books and edited 12 conference proceedings and 15 special issues of Journals. He won the 2000 IEEE Millennium Medal and received Distinguished Lecturer awards from IEEE NTC, IEEE LEOS and IEEE EDS. He is a Fellow of the Australian Academy of Science, Australian Academy of Technological Sciences and Engineering, The World Academy of Sciences, US National Academy of Inventors, Indian Academy of Sciences, IEEE, APS, MRS, OSA, AVS, ECS, SPIE, AAAS, FEMA, APAM, IoP (UK), IET (UK), IoN (UK) and the AIP. He received Peter Baume Award from the ANU in 2006, the Quantum Device Award from ISCS in 2010, IEEE Photonics Society Distinguished Service Award in 2010, IEEE Nanotechnology Council Distinguished Service Award in 2011 and Electronics and Photonics Division Award of the Electrochemical Society in 2012, 2013 Walter Boas Medal, 2015 IEEE Pioneer Award in Nanotechnology, 2015 IEEE Photonics Society Engineering Achievement Award, 2016 MRSI Silver Jubilee Anniversary Medal, 2016 Distinguished Fellow of Chinese Academy of Sciences, 2016 OSA Nick Holonyak Jr Award, 2017 Welker Award and 2017 IUMRS Somiya Award. He has received Australia's highest civilian honor, AC, Companion of the Order of Australia, as part of 2016 Australia day honors from the Office of the Governor General for his contributions to physics and engineering, in particular nanotechnology.

Host: Prof Michael Johnston

Audrey Wood Seminar Room, Clarendon Laboratory