Semiconductor Nanowires for Optoelectronics Applications

Chennupati Jagadish
Dept. of Electronic Materials Engineering, Research School of Physics and Engineering
Australian National University, Canberra, ACT 2601, Australia
email: c.jagadish@ieee.org

Abstract

Semiconductor Nanowires are considered as building blocks for next generation electronics and photonics. In this talk, I will discuss about growth of Semiconductor Nanowires using Vapor-Lqiuid-Solid (VLS) and Selective Area Epitaxy (SAE) methods and discuss about materials issues related to nanowires. I will present results on GaAs nanowire lasers, multi-quantum well nanowire lasers, zinc doped GaAs and InP nanowire lasers and nanopositioning of these lasers for flexible electronics applications. I will discuss about use of these nanowires for THz detectors, Solar Cells and neuroscience Applications.

Biography

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 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 20 other journals. He has published more than 880 research papers (600 journal papers), holds 5 US patents, co-authored a book, co-edited 11 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 National Science Academy, Indian Academy of Sciences, Andhra Pradesh Akademi of Science, 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, 2017 IUMRS Somiya Award and 2017 Nayudamma 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 Governor General of Australia for his contributions to physics and engineering, in particular nanotechnology. He holds honorary appointments in US, Japan, China and India.