InAs/InAsSb type-II superlattice and its applications in devices

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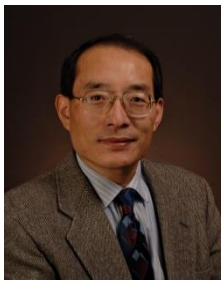
Abstract: The study of InAs/InAsSb T2SL on GaSb and its application to IR lasers was started in the early 90's. The observation of a 412 ns long carrier lifetime in a long-wavelength infrared (LWIR) InAs/InAsSb T2SL in 2011 triggered extensive research on the fundamental materials properties and device applications. Pressure-dependent photoluminescence (PL) experiments revealed some underlying material physics of these long carrier lifetimes. Some of the device applications will also be discussed.



Brief Bio: Professor Zhang did his thesis research at the Max Planck Institute for Solid States and received this doctoral degree in physics from the University of Stuttgart in 1991. He then worked as an Assistant Research Engineer at UCSB before he joined Hughes Research Labs (HRL) in 1993. In 1996, he was appointed Associate Professor in the Department of Electrical Engineering at ASU and was promoted to full professor in 2000. He edited 3 books, published 4 book chapters and more than 300 peered-reviewed journal and conference proceeding papers, presented 400 invited and contributed conference presentations, 18 issued and pending US patents, and advised over 30 PhD students and supervised over 40 postdocs and visiting scholars. He is a fellow of IEEE and OSA, and has served as the Associate Dean for Research at the Fulton Schools of Engineering, director and the Chair of the Governance Board of ASU NanoFab, and is the founding director of the Center for Photonics Innovation. His areas of research interest include Molecular Beam Epitaxy (MBE) growth of II-VI, III-V, IV-IV, and IV-VI materials, optical properties of semiconductor heterostructures and their applications in solar cells, photodetectors, lasers, transistors. He is currently the chair of both advisory boards for the International Conference on MBE and the North America Conference on MBE.