Applied Physics & OSA

Optics Seminar

Ordered Quantum and Dot Systems for Nano-Photonics Applications

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Abstract:

Studies and applications of quantum dot (QD) systems integrated with nano-photonic structures require a high degree of control on the dot positions and their electronic structure. We describe the fabrication of such QD systems using epitaxial growth on patterned substrates. Observation of confinement of neutral and charged exciton complexes, emission of single and correlated photons, design of the emission wavelength using substrate patterns, and preferential carrier injection via connected quantum wires (QWRs) are discussed. QD molecules that are tunnel-coupled by the connected QWRs are also investigated, and the incorporation of such ordered QDs in high-finesse optical microcavities is being explored.

Brief Biography:

Eli Kapon received his Ph.D. in physics from Tel Aviv University, Israel in 1982, respectively. He then spent two years at the California Institute of Technology, Pasadena, as a Chaim Weizmann Research Fellow, where he worked mainly on phase-locked arrays of semiconductor lasers. From 1984 till 1993 he was with Bellcore, New Jersey, first as member of technical staff, and from 1989 as District Manager. He managed the Quantum Structures District and the Integrated Optoelectronics District at Bellcore from 1989 till 1992 and from 1992 till 1993, respectively. In 1993 he was appointed Professor of Physics of Nanostructures at the Physics Department of the Swiss Federal Institute of Technology in Lausanne (EPFL), where he heads the Laboratory of Physics of Nanostructures. His current research interests include self-organization of nanostructures, optical properties and electron transport in low-dimensional quantum structures, quantum wire and quantum dot lasers, photonic crystals and vertical cavity surface emitting lasers.

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4:00pm-5:00pm.

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Refreshments will be available in the Watson Lobby at 3:45pm