ECE Distinguished Seminar Series

Sponsored by the IEEE EDS/ Photonics Chapter Distinguished Lecturer Program

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1:30 pm, 260 Dreese Laboratories

Dr. Raphael Tsu
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Man-made Superlattices and New Opportunities

Abstract: **Superlattices were introduced 40 years ago as man-made solids to enrich the class of materials for electronic and optoelectronic applications. The field metamorphosed to quantum wells and quantum dots with ever decreasing dimensions dictated by the technological advancements in nanometer regime. The main activity has gone beyond semiconductors. Superlattice is simply a way of forming a uniform continuum for whatever purpose at hand. There are problems with doping, defect-induced random switching, and I/O involving quantum dots. However, new opportunities in component-based nanostructures may lead us to new heights: expanding the important translational symmetry of solids to local symmetry of nanosolids.**

Bio: **Dr. Tsu is a Distinguished Professor of Electrical Engineering at UNC Charlotte since 1988. He is a fellow of the American Physical Society, winner of: the IBM Outstanding Contribution Award (1975), the Alexander von Humboldt Award (1975), and co-recipient with Leo Esaki (Nobel Prize winner) of the American Physical Society's International New Materials Prize (1985). After several years at Bell Laboratories at Murray Hill, NJ, developing ultrasonic amplifiers, Professor Tsu moved to the IBM's T.J. Watson Research Center in Yorktown Heights, NY. That was the beginning of his well-known collaboration with Esaki, introducing the man-made quantum materials, superlattices and quantum wells. His research has been cited close to 10,000 times and he has an H index of 42. Currently, he is concerned with superlattices as components instead of man-made bulk solids as materials for device applications.**

Hosted by: Paul R. Berger