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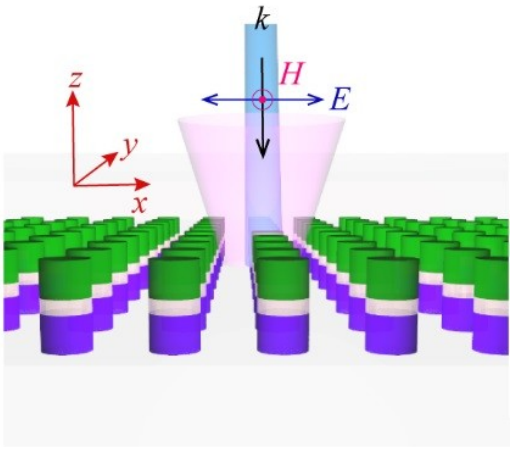

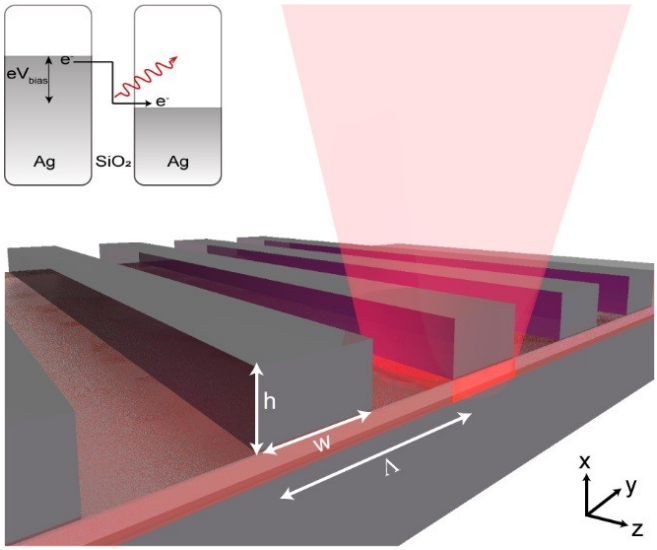

Light Emission from Semiconductor and Plasmonic Nanoantennas

Dr. Naresh Kumar Emani

Associate Professor,
IIT Hyderabad

OCT | 18th | 2024

TIFR H Auditorium 16:00 Hrs

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There is an explosion in demand for bandwidth from mobile devices to data centres and supercomputers. The power consumed by the electrical on-chip interconnects based on CMOS technology has become a significant part of overall chip power consumption and is fast becoming unsustainable. Integrated photonics addresses this problem by integrating optoelectronic devices with the CMOS IC. It provides a viable path to improve the data rates in the near term and potentially disrupt computing technology in the next decade. One of the major challenges in on-chip/integrated photonics is the miniaturization of lasers.

In this talk, we will review the key challenges in realizing nanoscale light sources. We will discuss our work at IIT Hyderabad on addressing the miniaturization of optical sources, one of the key challenges in integrated photonics. We will present the developments in the area of lasing from high-index semiconductor nanoantennas and present various techniques used to create the directionality and tunable intensity using gain -loss modulation.

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Tea/Coffee 15:45 Hrs