

**International School of Photonics, ISP**  
Cochin University of Science and Technology

**Special Talk**

23 June 2022  
Venue: Auditorium, ISP

**Pico-EE: The journey and process of research to picoscale electrodynamic engineering**

Zubin Jacob (Purdue University, USA) Bonnie Yeager (Cleveland Institute of Music, USA)

In this talk, I (Zubin Jacob) will describe my journey which started from engineering nanoscale electrodynamic properties of matter. Recently, my research focus has evolved to picoscale electrodynamic properties which combine the quantum theory of atomistic matter with Maxwellian electrodynamic. This endeavor sheds light at a regime of electrodynamic wave physics in matter which has been unexplored till date. I will describe possible applications stemming from pico-EE in ultra-subwavelength circulators, topological phases of matter and coherent control of spin qubits for information processing. In the end, along with Ms. Bonnie Yeager, I will talk briefly about what I have learnt over the years about the unique process of research which may be useful for young scientists and engineers beginning their own journey. You can find more information about my research team at [www.electrodynamics.org](http://www.electrodynamics.org)