

Module PMRF-ISSS015/2024

Plasmonics: Fundamentals and Applications

Name of the PMRF student

Renu Raman Sahu

Required background of the students taught

Physics, Electromagnetism

Details of the content of the module

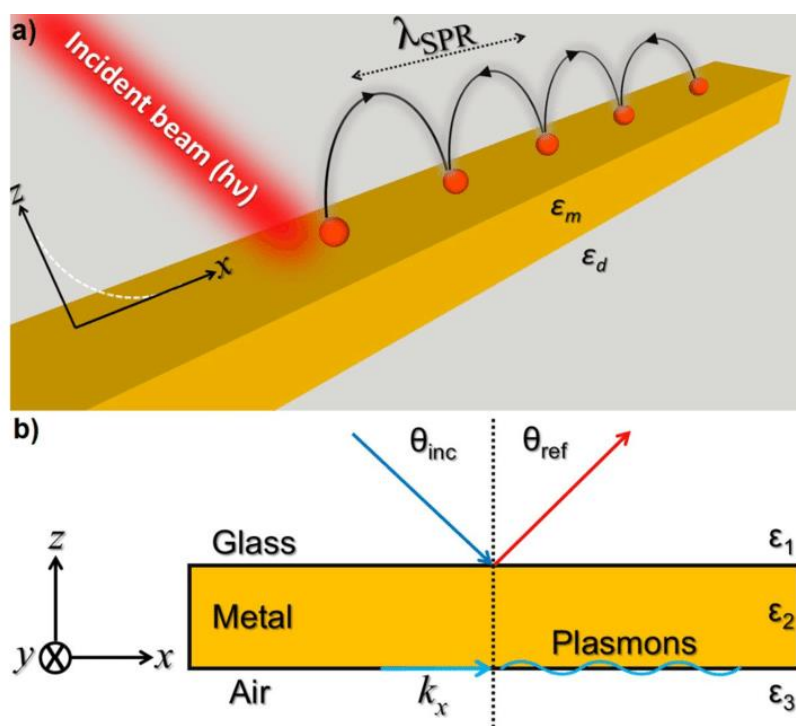
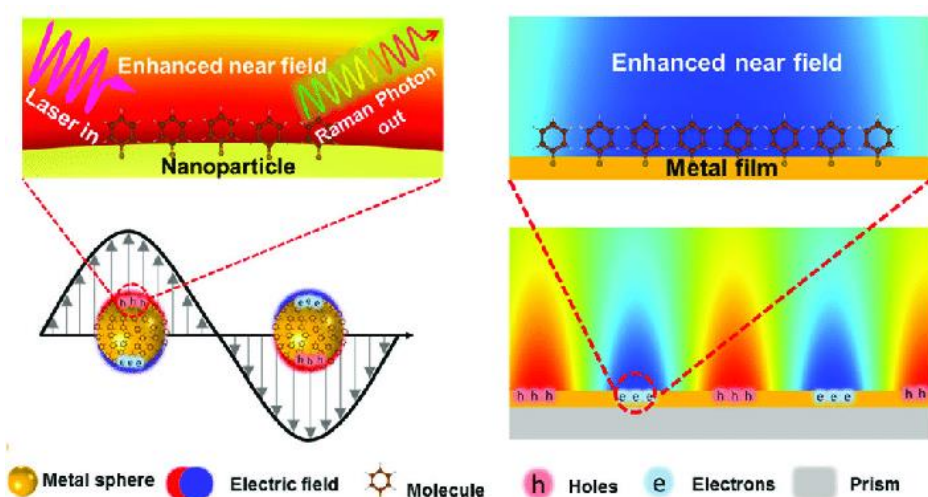
Topics: Maxwell's Equations and Electromagnetic Wave Propagation, The Dielectric Function of the Free Electron Gas, The Dispersion of the Free Electron Gas and Volume Plasmons, Real Metals and Interband Transitions, The Energy of the Electromagnetic Field in Metals,

The Wave Equation, Surface Plasmon Polaritons at a Single Interface, Multilayer Systems, Energy Confinement and the Effective Mode Length

Normal Modes of Sub-Wavelength Metal Particles, Mie Theory, Beyond the Quasi-Static Approximation and Plasmon Lifetime, Real Particles: Observations of Particle Plasmons, Coupling Between Localized Plasmons, Void Plasmons and Metallic Nanoshells, Localized Plasmons and Gain Media

Planar Elements for Surface Plasmon Polariton Propagation, Surface Plasmon Polariton Band Gap Structures, Surface Plasmon Polariton Propagation Along Metal Stripes, Metal Nanowires and Conical Tapers for High-Confinement Guiding and Focusing, Localized Modes in Gaps and Grooves

Nature of Module: Lectures and Assignments



Schedule of the module

Start Date: 2nd February 2024

End Date: 10th May 2024 (Tentative)

Time: Fridays 6-8PM

Meeting link : Will be shared later

Contact email ID: dsraman.sc@gmail.com

Registration link:



<https://forms.gle/eUoNPsvNzftKRrWG6>