

A review on surface plasmon resonance and its application as biosensing element

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Surface plasmon resonance (SPR) is an optical phenomenon which takes place at dielectric and metal interface. The light at a particular angle is incident on the metal surface and when the frequency of light coincides with the vibration frequency of electrons, resonance occurs. This resonance is confined at the interface. In this review paper various aspects of surface plasmon, their generation, and their material dependency is reviewed. The optical generation of surface plasmon due to prism coupling, grating coupling and waveguide coupling is discussed and compared using available literature. Then SPR application as biosensing element is reported. SPR-based biosensors generally deal with the study of biomolecular interactions, detection of cancer biomarkers and other human diseases and also screening of inhibitor of tumor targets. A biosensing element is designed using different metal coating of gold, silver and aluminium of thickness 50 nm. The simulation of the biosensing element design has been carried out to show the effect of addition of protein on the reflectance versus incident angle on the three materials coating i.e. Gold, Silver and Aluminium. The results shows that a maximum shift in resonance angle ($\Delta\theta_{\text{res}} = 6.50^\circ$) occur for gold coating and therefore gives better sensitivity than other material coating.

Biography

Ritu Sharma has completed his PhD in the year 2011 from Malaviya Institute of Technology, Jaipur, India. She is working as Assistant Professor in Department of Electronics and Communication, MNIT Jaipur. She has work experience of 17 years published more than 35 papers in various reputed journals and international conferences and has been serving as a reviewer of many journals of repute.

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