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Blood cell targeting with silver nanoparticles grown by plasma sputtered PVDMukesh Ranjan¹¹FCIPT, Institute for Plasma Research, Gandhinagar, India

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Abstract

Resonant interaction of coherent electron oscillations with incident light field is known as localised surface plasmon resonance (LSPR). Due to LSPR, field enhancement in the surrounding of nanoparticle has given birth to several useful phenomenon like surface enhanced Raman scattering (SERS), surface enhanced IR absorption (SEIRA) etc. Both these phenomenon are widely investigated for molecular and biological tissue detection, since field enhancement leads to an enhanced light absorption by the molecular oscillations. In the present work investigation of different blood groups using SEIRA phenomenon will be reported in presence of silver nanoparticles grown by magnetron sputtering deposition. Usually blood cell show detectable absorption spectra in the IR region but what is observed in our experiment that in presence of nanoparticles vibrational modes are clearly resolved in the IR spectra specific to the different blood groups. We aim to investigate highly diluted blood cells that would normally be giving a noisy signal in absence of nanoparticles. Furthermore, effect of alcohol on the blood spectra will be investigated for the forensic science application. Since size and interparticle gap have strong influence on the field enhancement and hence on SEIRA, therefore several size combinations of nanoparticles will be investigated.

Keywords

SEIRA

silver nanoparticles

magnetron sputtering

PVD