Contribution ID: **86** Type: **Oral Presentation**

Fluence enhanced optical response of ion implanted stripper foil carbon thin films

Wednesday, 27 June 2018 11:40 (20 minutes)

Silver nanoparticles (NPs) are known to exhibit a strong interaction with light because the conduction electrons on the metal surface undergo a collective oscillation once excited by light at specific wavelengths; the so-called surface plasmon resonance (SPR). However, their incorporation into amorphous carbon is shown to greatly influence the overall optical response of the nanomaterial due to aggregation of the NPs in the host amorphous carbon. In this paper, we studied the optical response of silver irradiated amorphous carbon films due to varying fluence of the NPs. Stripper foil amorphous carbon films were irradiated by 25kV Ag ions at different fluences ranging from 2.5 to 3.4 x 1016 ions/cm2. Optical absorption studies revealed that the SPR of Ag NPs on quartz substrate occurs at wavelength ⊠410 nm but shows a blue shift (⊠60 nm) in the irradiated film with increasing ion fluence up to 3.4 x 1016 ions/cm2. Transmission electron microscopy (TEM) was used to investigate the particle size and aggregation. The blue shift response in plasmonic wavelength is explained with respect to the increase in particulate density due to increasing fluence of irradiation as confirmed by TEM.

Please confirm that you
have carefully read the
abstract submission instructions
under the menu item
”Call for Abstracts”
(Yes / No)

Yes

Consideration for
student awards
Choose one option
from those below.
N/A
Hons
MSc
PhD

PhD

Supervisor details
If not a student, type N/A.
Student abstract submision
requires supervisor permission:
please give their name,
 institution and email address.

Professor S.R. Naidoo
School of Physics, University of the Witwatersrand, Private Bag 3, WITS 2050, Johannesburg, South Africa.
mervin.naidoo@wits.ac.za

Primary author: Mr ISMAILA, Abdulsalam (WITS)

Co-author: Prof. NAIDOO, S.R. (WITS)

Presenter: Mr ISMAILA, Abdulsalam (WITS)

Session Classification: Physics of Condensed Matter and Materials

Track Classification: Track A - Physics of Condensed Matter and Materials