

Investigation of gold-graphene surface plasmon resonance biosensor**Toloue A.T¹, Anthony Centeno¹, M. T. Ahmadi²****¹ Nano³ i-kohza, Malaysia- Japan International Institute of Technology (MJIT), Universiti Teknologi Malaysia, 54100 Kuala Lumpur, Malaysia****²Nanotechnology Research Center, Nanoelectronic group, Physics Department, Faculty of Science, Urmia University, Urmia, Iran****E-mail: h.toloue@gmail.com****ABSTRACT**

Metal thin film functionalization with biomolecular recognition elements (BRE), to improve adsorption of biomolecule, is a way for SPR biosensor sensitivity enhancement. In this paper a graphene-based SPR biosensor with wavelength modulation will be presented. A few graphene layers added to a conventional gold thin film SPR biosensor leads to a drastic increase in sensitivity. This is due to the increased biomolecule adsorption in the graphene layers. In comparison to conventional SPR sensors this produces a large change in the index of refraction change at the metal-dielectric interface. In this paper, the reflection of light coupled into a SPR mode propagating along a thin Au-graphene layer surrounded by dielectric layers is simulated and it is compared with a conventional SPR sensor. The simulation of light reflection in wavelength modulation via MATLAB is illustrated.

| SPR | Graphene | Biosensor | MATLAB |