Abstract

Optical sensor preparation by two methods Spin coating (SC) and Laser induced forward transfer (LIFT), two methods applied using Nanocomposite (reduced graphene oxide nanoparticles (rGONPs) and silver nanoparticles (AgNPs)). Graphene oxide synthesis used Hummer's method from rod graphite and chemical compound, GO reduction by using green chemical method used green tea leaves which is friendly process with low cost. Nanoparticles GO, rGO and AgNPs characterization by these techniques XRD, FTIR, AFM and UV-Vis. In XRD GONPs and rGONPs showed hexagonal structure with peaks at ($2\theta = 11.22^{\circ}$) and ($2\theta = 26.2^{\circ}$) respectively while AgNPs showed FCC structure. FTIR spectrum insure the reduced of oxygen by green tea for (rGONPs) while the AFM image indicated the nanostructure of nanoparticles. UV-Vis spectrum, GO spectra exhibit absorption at ~ 280 nm while the peak shifted to ~ 295nm indicated that rGO successful synthesis. Nanocomposite film preparation with three different proportion in two methods Spin coating (SC) and Laser induced forward transfer (LIFT). Structure properties of two methods indicated face-centered cubic (FCC) crystalline structure, respectively. In SEM and AFM images illustrate the formation of AgNPs in the surface of rGONPs. In FTIR the peaks due to carbonyl and other groups show further reduction in their intensity and that because of the formation of AgNPs on surface of rGO. Optical properties by used aluminum poles deposition on glass substrate then using LIFT to prepared optical sensor, I – V characteristic indicated that device is optical sensor (Schottky) with good properties increase with increasing of AgNPs. Responsivety (R), Directivity (D*) and Quantum efficiency (η) for devises increase also with increasing of AgNPs proporti