

Laser ablation synthesis of silver nanoparticle in graphene oxide and thermal effusivity of nanocomposite

ABSTRACT

In this study, the silver nanoparticle was prepared in graphene oxide by using laser ablation technique. The silver plate immersed in graphene oxide, and irradiated by Q-switch Nd:YAG laser at 532 nm wavelength during 10, 15, 30 and 60 minutes. The size and concentration of silver nanoparticle (Ag-NPs) shifted from 38 nm to 8 nm and 1.3 ppm to 9.6 ppm, respectively. Thermal effusivity was measured by using photoacoustic technique, and the results were analyzed using Rosencwaig-Gersho theory. This results shows the thermal effusivity of nanocomposite was increased with an increasing the concentration of silver nanoparticle from 0.1875 to 0.1979 $W.s^{1/2}.cm^{-2}.K^{-1}$.

Keyword: Silver nanoparticle; Graphene oxide; Thermal effusivity; Laser ablation