

Reflectance response of optical fiber sensor coated with graphene oxide towards ethanol

ABSTRACT

In this paper, optical multimode fiber reflectance sensor for ethanol with different concentrations in water was developed. The sensor was coated with graphene oxide (GO) by drop-casting technique. The dynamic response of GO nanostructured thin film coated on optical multimode fiber tip exposed to ethanol liquid was investigated. GO thin film was characterized via Raman microscopy and Scanning Electron Microscopy (SEM). The reflectance decreased by 37% when the fiber tip was exposed to 5% concentration of ethanol in water. The sensor shows fast response and recovery as low as 30 s and 45 s, respectively.

Keyword: Optical fiber sensor; Multimode fiber; Graphene oxide; Ethanol sensing; Reflectance