

## **Reduced graphene oxide decorated with polypyrrole nanoparticles layer for detection of pyrene using surface plasmon resonance technique**

### **ABSTRACT**

A reduced graphene oxide layer was decorated with polypyrrole nanoparticles (PPy-NPs), and nanocomposite layers were deposited using the electro-chemical technique. The nanocomposite layer was used to detect pyrene using the surface plasmon resonance technique and the results were compared with the polypyrrole layer. The layers were characterized using a field emission scanning electron microscope (FE-SEM), Fourier transfer infrared spectroscopy (FT-IR) and X-Ray diffraction (XRD). Variations in shift of the resonance angle with time were registered to evaluate the sensing layers. It was found that the sensitivity of polypyrrole nanoparticles and reduced graphene oxide nanocomposite layer was higher than that of the polypyrrole layer. The limitation of the nanocomposite sensing layer was about 0.01 ppm which was larger than that of the polypyrrole sensing layer.

**Keywords:** Graphene oxide; Polypyrrole nanoparticles layer; Pyrene; Surface plasmon resonance technique