

Graphene/ZnO/Polymer Nanocomposite Thin Film for Separation of Oil-Water Mixture

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Abstract : Offshore oil-spill has become the most emerging problem in the world. In the current paper, a graphene/ZnO/polymer nanocomposite thin film is coated on stainless steel mesh via layer by layer deposition method. The structural characterization of materials is determined by Scanning Electron Microscopy (SEM) and X-ray diffraction (XRD). The total petroleum hydrocarbons (TPHs) and separation efficiency have been measured via gas chromatography – flame ionization detector (GC-FID). TPHs are reduced to 2 ppm and separation efficiency of the nanocomposite coated mesh is reached ≥ 99% for the final sample. The nanocomposite coated mesh acts as a promising candidate for the separation of oil-water mixture.

Keywords : oil spill, graphene, oil-water separation, nanocomposite

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