

## Documents

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**Fabrication and Characterisation of Recycled Polyethylene Terephthalate/Graphene Oxide Nanofibres as a Potential Adsorbent for Methylene Blue**

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**Abstract**

Polymeric nanofibres can be good dye adsorbents as they have large surface areas, good connectivity, and tunable wettability. In this study, recycled polyethylene terephthalate (rPET) nanofibres loaded with graphene oxide (GO) in various amounts (0 - 1.5 v/v%) were fabricated using the electrospinning technique. GO is a carbonaceous material that exhibits a large specific area and contains an oxygenous functional group that significantly enhances the performance of electrospun nanofibres. Scanning electron microscopy images showed that rPET/GO had smooth fibres with diameters as low as  $118 \pm 56$  nm. Fourier-Transform Infrared Spectroscopy (FTIR) confirmed GO had been well incorporated in the rPET nanofibres. The use of GO as a filler increased the tensile strength to  $32.84 \pm 0.33$  MPa, and thus enhanced the mechanical properties of the polymeric nanofibres. The adsorption capacity of the rPET/GO nanofibres for methylene blue (MB) was evaluated, and rPET nanofibres loaded with GO showed better adsorption compared with pure rPET nanofibres. From this study, rPET/GO nanofibres show good potential as adsorbents for the treatment of dyes in wastewater. © 2022 Malaysian Institute of Chemistry. All rights reserved.

**Author Keywords**

adsorption; electrospinning; graphene oxide; methylene blue; Nanofibers

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