

TiO₂ nanosheet incorporated polysulfone ultrafiltration membranes for dye removal

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ABSTRACT

Incorporation of nanomaterials in polymeric membranes is an effective means to improve membrane performance. In the present work, a novel additive TiO₂ nanosheet was incorporated in polysulfone membrane. TiO₂ nanosheets were synthesised by hydro-thermal method and blended with polysulfone to give nanocomposite membranes. The membranes performance was evaluated via pure water flux, bovine serum albumin rejection and anti fouling studies. Further the membranes were subjected to dye rejection application using Congo red and Rhodamine-B dyes. The membranes were characterised using scanning electron microscopy; X-ray diffraction and contact angle measurement. The nanocomposite membranes exhibited superior permeation, anti fouling and dye rejection traits.

Keywords: TiO₂ nanosheets; Polysulfone; Nanocomposite; Membrane; Dye

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