

FABRICATION OF A GRAPHENE OXIDE DISPERSED POLYSULFONE NANOFILTRATION MEMBRANE FOR FLUORIDE REMOVAL FROM WATER

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SUMMARY: Graphene oxide dispersed polysulfone mixed matrix nanofiltration membranes was prepared via the immersion phase inversion process. The morphology of prepared membranes was studied by scanning electron microscope images, contact angle measurements and Fourier transform infrared spectroscopy. The fabricated membranes performance on pure water flux and fluoride removal from water was investigated in this study. The results showed that the pure water flux at transmembrane pressure of 5bar was 62.50 LMH. Also, the fluoride removal efficiency at initial concentrations of 4 to 10mg/L was more than 80 %. High water flux and fluoride rejection could be due to the unique nanostructure of graphene oxide and presence of hydrophilic functional groups. Because of high pollutants removal from water, low energy consumption and relatively easy fabrication, graphene membranes can be expected as a promising technology in future.

Key words: Fluoride removal, Nanofiltration membrane, Polysulfone, Graphene oxide, Phase inversion.

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