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CHARACTERIZATION AND PERFORMANCE OF POLYMER COMPOSITE MEMBRANES FOR THE REMOVAL OF HUMIC SUBSTANCES FROM WATER

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Abstract

This present study, investigates the performance of activated sardine scale powder (ASSP)/ Cellulose acetate (CA)/Polyvinylpyrrolidone (PVP) and powdered activated carbon (PAC)/ Cellulose acetate (CA) / Polyvinylpyrrolidone (PVP) composites membranes prepared by phase inversion for the elimination of humic substances (HS) from aqueous solutions. The materials and composites membranes were characterized by FTIR, XRD, SEM analyses. Overall, the results exhibit the higher performance of ASSP /CA/ PVP composite membrane than PAC /CA/ PVP composite membrane for the elimination of humic substances from water. Adsorption isotherm non-linear studies indicated that the two composites membranes can be successfully modeled by the Langmuir, Freundlich, and Temkin. The maximum monolayer adsorption capacity was found to be 31.00 mg/g and 23.32 mg/g for ASSP /CA/ PVP and PAC /CA/ PVP composites membranes, respectively. ASSP /CA/ PVP composite membrane seems to be a promising material for HS removal from aqueous solutions.

Keywords: activated carbon; adsorption; composite membrane; humic substance; phase inversion

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