

Comparison of two different UV-grafted nanofiltration membranes prepared for reduction of humic acid fouling using acrylic acid and N-vinylpyrrolidone

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ABSTRACT

UV-photografting using two different monomers, acrylic acid and *N*-vinylpyrrolidone, with different concentrations in an aqueous solution and various irradiation times were studied. Irreversible fouling of both the un-grafted polyethersulfone and the UV-grafted membranes have been studied using humic acid model solutions at two different pH values; 7 and 3. It was observed that the UV-grafted membranes exhibited practically less tendency to be irreversibly fouled by humic acid molecules at pH 7. However at the acidic condition of pH 3, some membranes exhibited a higher degree of fouling more than the un-grafted membrane, especially for membranes with higher roughness values. The smaller pore size generated after UV-grafting of polyethersulfone membrane did not significantly affect humic acid removal due to the larger humic acid molecular size.

KEYWORDS:

Polyethersulfone; UV-photografting; Humic acid; Acrylic acid; N-vinylpyrrolidone

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