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عنوان مقاله:

A new concept to preparation of thin film nanocomposite nanofiltration membrane by interfacial polymerization as an approach to solve biofouling problem

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خلاصه مقاله:

This paper aims to development of a new concept for formation of mixed matrix nanofiltration (NF)membranes by interfacial polymerization of nanocomposite thin films on porous polyethersulfone support. Nanocomposite films created for this study comprise silver (Ag) nanoparticles embeddedwithin ultra thin polyamide films in order to produce antibacterial properties. Thin film composite (TFC) polyamide membranes exhibit a rough and dense film was formed on the PES support membrane, whereas thin film nanocomposite membranes have measurably rougher and larger poresize. At the 0.05 wt.% Ag nanoparticles loadings, nanocomposite film morphology is visibly different and water flux is much more that of polyamide membranes with slight decrease in salt rejections. A quantitative method was used to investigate the antibacterial properties of the nanocompositemembranes. The optical density decreases with increasing the number of circles meaning that the antibacterial effect becomes more obvious. As a concept, thin film nanocomposite membrane technology may offer new degrees of freedom in tailoring NF membrane separation performance and antibacterial properties

کلمات کلیدی:

Thin film nanocomposite, Nanofiltration, mixed matrix membrane, interfacial polymerization, antibacterial effect

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