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A novel thin-film nano-templated composite membrane with *in situ* silver nanoparticles loading: Separation performance enhancement and implications

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Abstract

We developed a facile approach to synthesize thin-film nano-templated composite (TFNt) nanofiltration membrane with high water permeability, high NaCl/$MgSO_4$ selectivity and strong antimicrobial properties. A polydopamine (PDA) coating on a polysulfone support was used as a nano-template to generate silver nanoparticles (AgNPs) *in situ* with high loading and high uniformity. A subsequent interfacial polymerization reaction of piperazine and trimesoyl chloride was performed on this nano-template substrate to form the TFNt membrane. The TFNt membrane had significantly increased both the water