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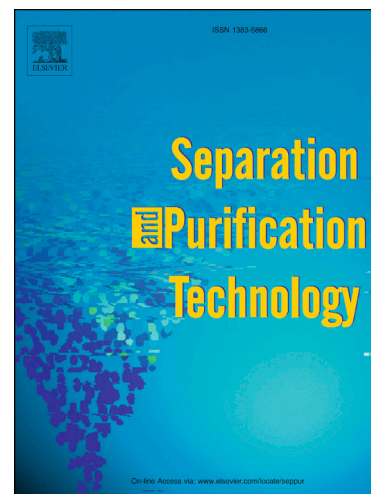
Bio-inspired fabrication of superhydrophilic nanocomposite membrane based on surface modification of SiO<sub>2</sub> anchored by polydopamine towards effective oil-water emulsions separation

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**Bio-inspired fabrication of superhydrophilic nanocomposite  
membrane based on surface modification of SiO<sub>2</sub> anchored by  
polydopamine towards effective oil-water emulsions separation**

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**Abstract:** A new PVDF@pDA@SiO<sub>2</sub> nanocomposite membrane was fabricated by virtue of the surface modification of polydopamine anchored SiO<sub>2</sub> on PVDF membrane through a facile and eco-friendly preparation process. It possessed the superior superhydrophilicity/underwater superoleophobicity properties and presented the outstanding antifouling oil performance and high-efficiency separation ability for oil-water emulsions, which mainly resulted from its special surface micro-nano structure and pore induced capillarity phenomenon. Furthermore, the PVDF@pDA@SiO<sub>2</sub> nanocomposite membrane also exhibited the splendid separation performance, regeneration ability and universality for various oil-water emulsions separation. In addition, the oil-water emulsion separation mechanism was discussed in depth. This work might provide a significant guidance for large-scale production and application of this nanocomposite membrane in the fields of wastewater recovery and drinking water treatment.

**Key words:** Bio-inspired; Nanocomposite membrane; Superhydrophilicity; Underwater superoleophobicity; Oil-water emulsions separation

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