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## **Polypropylene Microfiltration Membranes Modified with TiO<sub>2</sub> Nanoparticles for Surface Wettability and Antifouling Property**

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### **Abstract**

TiO<sub>2</sub> nanoparticles have attracted much attention in the surface modification of polymer membranes for antifouling purpose due to their excellent hydrophilicity. In this work, a polydopamine/polyethyleneimine (PDA/PEI) intermediate layer was fabricated on the polypropylene microfiltration membrane via a co-deposition method and then TiO<sub>2</sub> nanoparticles (NPs) were modified on the membrane surfaces through a sol-gel process. TiO<sub>2</sub>-modified membranes with various Ti/C ratios were prepared and their surface structures and properties are compared with those of the nascent and PDA/PEI-deposited ones. Results indicate that the TiO<sub>2</sub> NPs modification increases both the surface wettability and the water permeation flux of the membranes remarkably. TiO<sub>2</sub> NPs also endow the membranes with promoted protein resistance properties. The relative flux reduction and flux recovery ratio are  $31 \pm 3\%$  and  $82 \pm 5\%$  for bovine serum albumin

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