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Abstract

Omniphobic alumina hollow fiber membranes were developed for direct contact membrane distillation (DCMD) with a low surface tension feed in this study. Alumina hollow fiber (HF) membranes were prepared as the membrane substrates, and chemical bath deposition methods were applied to deposit ZnO nanorods and nanoparticles on the HF membranes. The SEM, EDX, and AFM analyses showed that the ZnO nanostructures were effectively deposited on the membrane surfaces and able to increase the surface roughness. After surface fluorination by FAS17, the HF membranes deposited by ZnO nanorods and nanoparticles demonstrated contact angles of 128.7° and 138.1° for a 90% v/v ethanol/water

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