

Flow synthesis of a novel zirconium-based UiO-66 nanofiltration membrane and its performance in the removal of *p*-nitrophenol from water

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Electronic Supplementary Material

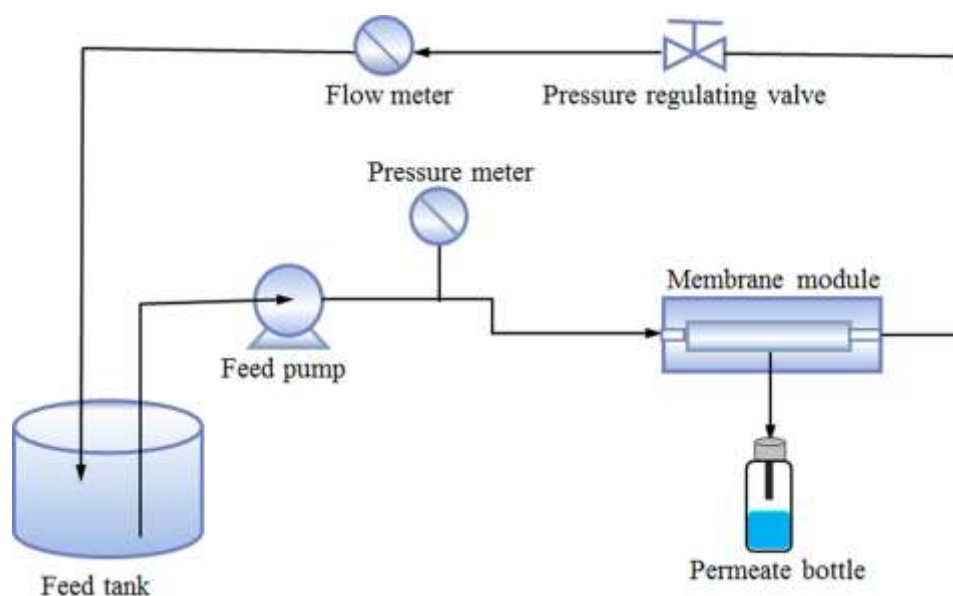


Figure S1. Schematic diagram of nanofiltration setup

The prepared solution containing p-nitrophenol was used as the feed solution and was transferred to the feed tank. The feed solution was introduced into the membrane module by a high-pressure water pump (LG-10, Zhong hui da, China) with a pressure-regulating valve manually adjusted to maintain a constant pressure displayed on a pressure gauge. The flow of the liquid was monitored using an in-line digital flow meter. The product in the permeate side was collected in the bottle for analysis.

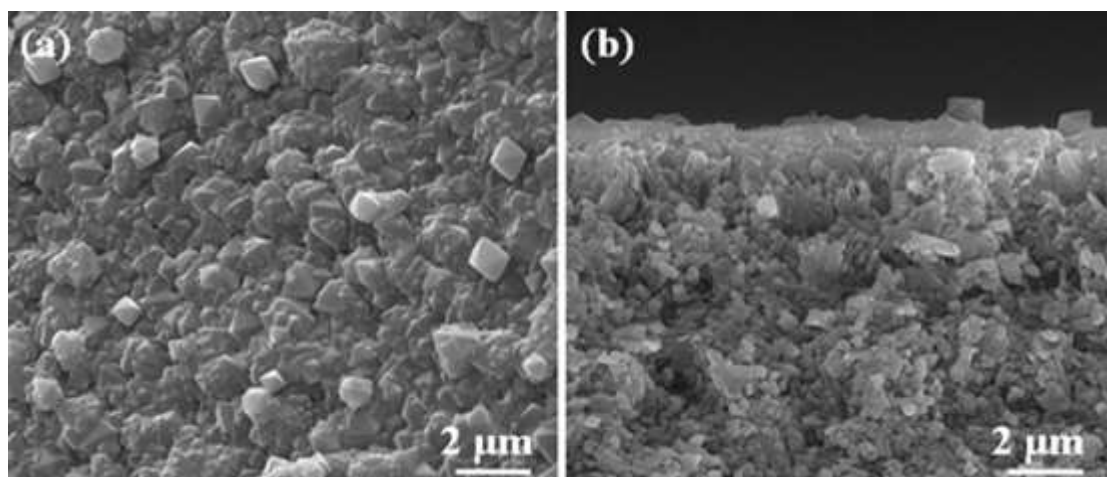


Figure S2. SEM images of UiO-66 membranes grown under conventional static state at 120 °C for 30 h: (a) surface, (b) cross-section

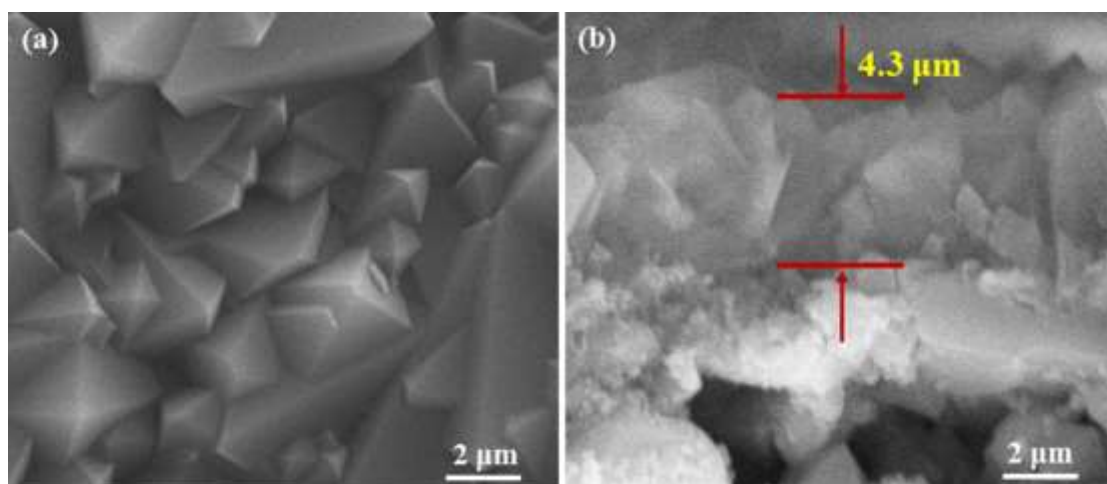


Figure S3. SEM images of UiO-66 membranes grown under conventional static state at 120 °C for 72 h: (a) surface, (b) cross-section

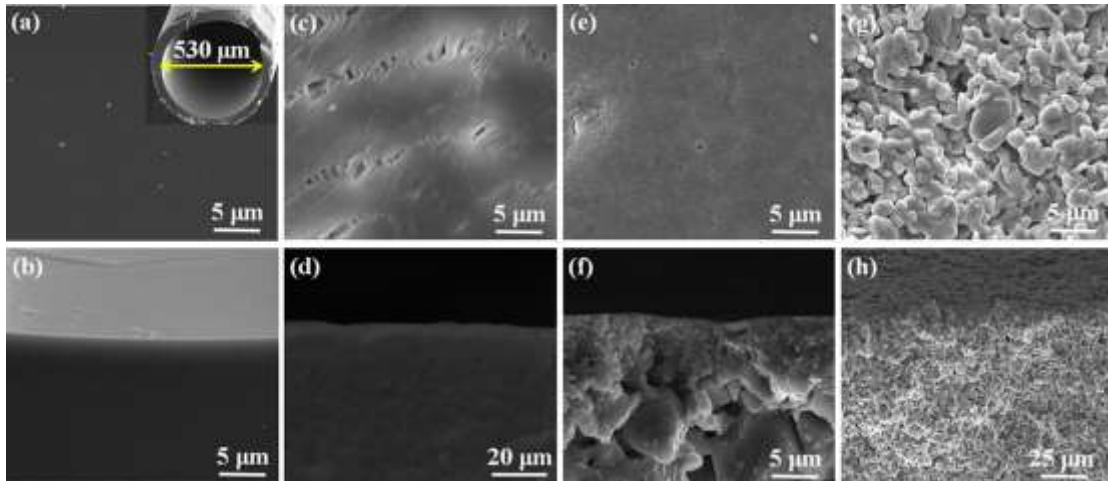


Figure S4. SEM images of different tubes as substrates for membrane growth: (a, b) quartz capillary tube, (c, d) PTFE tube, (e, f) 0.2 μm $\alpha\text{-Al}_2\text{O}_3$ substrate, (g, h) macropore Al_2O_3 substrate

The quartz capillary tubes (OD 630 μm , ID 530 μm , length 150 mm) were purchased from Dalian Zhong Hui Da Instrument Co; The PTFE tubes (OD 1.8 mm, ID 0.8 mm, length 60 mm) were supplied by DICP. and have a mean pore diameter of 0.15 μm ; The $\alpha\text{-Al}_2\text{O}_3$ tubular supports (OD 10 mm, ID 8 mm and length 60 mm) employed have two specifications, which are 0.2 μm and 1-3 μm in pore diameter, respectively, and were supplied by Fo Shan Ceramics Research Institute.