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Hierarchical porous membrane via electrospinning PIM-1 for micropollutants removal

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ABSTRACT

Ideal adsorbents are featured by both high adsorption capacity and high adsorption rate. Current adsorptive membranes enjoy good mass transfer performance but have limited sorption capacity. Microporous organic polymer has superiorities of small pore size and high surface area which is conducive to high adsorption capacity, but usually suffers from high mass transfer resistance. In this work, the polymer of intrinsic microporosity PIM-1 was fabricated into microfiber membranes by electrospinning for carbendazim and phenol adsorption. The PIM-1 and its electrospun membranes were characterized by ¹H NMR, GPC, ATR-FTIR, FESEM, TG and BET measurements. The electrospun PIM-1 membrane was demonstrated to have hierarchical porous structure with high surface area. The equilibrium adsorption capacity for carbendazim and phenol was 0.084 mmol/g and 0.804 mmol/g, respectively. The adsorption isotherm fits well with Langmuir model and the

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