



Preparation polyamide nanofiltration membrane by interfacial polymerization

Aoling Zhang, Rui Ma, Yijun Xie, Bin Xu, Shengji Xia*, Naiyun Gao

State Key laboratory of Pollution Control and Resources Reuse, Tongji University, Shanghai 200092, China

Tel. +86-13611624498, +86-13693187400; Fax: +86-21-65986313; email: xiashengji@hotmail.com

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ABSTRACT

Nanofiltration (NF) composite membrane was prepared by interfacial polymerization of 1,6-hexylenediamine, o-phenylenediamine or piperazine with trimesoyl chloride (TMC) on the surface of polysulfone support, respectively. Meanwhile, two polysulfone support membranes with different molecular weight cut off (MWCO) were introduced into this experiment, hoping to find the influence of porous substrates on the prepared membrane performance. Furthermore, the water flux and salt rejection rate of those three kinds of newly-prepared NF composite membranes were compared by water filtration experiment. In order to make interfacial polymerization much more effective, kinds of reaction ratios between piperazine and TMC were designed. It can be seen from the results that piperazine reacts better with TMC compared to the other two chemical medicines, and the salt rejection rate of poly (piperazine) NF composite membranes can arrive at 55% under the condition of laboratory; however, the effects of polysulfone supports on NF performances were various when different polyamines were put to use and polysulfone support membrane M (the one with higher molecular weight cut-off) was preferred to prepare the poly (piperazine).

Keywords: Trimesoyl chloride; Piperazine; Water flux; Salt rejection rate; Water treatment; Nanofiltration

*Corresponding author.