

The influence of nanosheets' size on pressure assisted self-assembly graphene oxide nanofiltration membrane

Yi Wei^{a,b,c,*}, Xueli Gao^{a,b,*}, Xiaojuan Wang^{a,b}, Baohua He^d, Congjie Gao^{a,b}

^aKey Laboratory of Marine Chemistry Theory and Technology, Ministry of Education, Ocean University of China, No. 238, Songling Road, Qingdao 266100, China, Tel. +86 13012488897; email: weiyi@lzu.edu.cn (Y. Wei), Tel. +86 532 66782017; email: gxl_ouc@126.com (X. Gao), Tel. +86 0532-66782017; email: safiya0524@163.com (X. Wang), Tel. +86 0532-66782017; email: gaocj@zjut.edu.cn (C. Gao)

^bCollege of Chemistry and Chemical Engineering, Ocean University of China, No. 238, Songling Road, Qingdao 266100, China

^cKey Laboratory of Western China's Environmental System (Ministry of Education) and Gansu Engineering Research Center of Fine Particles Pollution Control Technology and Equipment, College of Earth and Environmental Science, Lanzhou University, No. 222, Tianshui South Road, Lanzhou 730000, China

^dGansu Membrane Science and Technology Research Institute Co., Ltd., No. 1272, Duanjiatan, Lanzhou 730000, China, Tel. +86 13803205230; email: 331481677@qq.com (B. He)

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ABSTRACT

The size of graphene oxide (GO) has an effect on the properties of GO membranes (GOMs). However, the relationship between the influences of size and oxidation degree of GO on GOMs has not been thoroughly studied. In this study, we prepare to GO with different sizes by adjusting ultrasonic power and reduce GO in alkaline reduction. Pressure assisted self-assembly method is used to fabricate GO and reduced GOMs. The decreasing size increases the roughness and flux of GOM, and weakens the effect of reduction on the enhancement of the permeability of GOM. Even the permeability is reduced by reduction when the size is small enough. The penetration mechanism is related to the size of nanosheets that would influence the wrinkled structure, the wetting performance, and the channel structure of GOM.

Keywords: Graphene oxide; Nanosheets size; Nanofiltration membrane; Self-assembly; Desalination

* Corresponding authors.