www.elsevier.com/locate/memsci

A facile approach to construct hierarchical dense membranes via polydopamine for enhanced popylene/nitrogen separation

Manquan Fang, Haotian Zhang, Jinxun Chen, Tao Wang, Jie Liu, Xiang Li, Jiding Li, Xingzhong Cao

PII: S0376-7388(15)30276-3
DOI: http://dx.doi.org/10.1016/j.memsci.2015.10.046
Reference: MEMSCI14069

To appear in: *Journal of Membrane Science*

Received date: 8 July 2015
Revised date: 13 October 2015
Accepted date: 19 October 2015

Cite this article as: Manquan Fang, Haotian Zhang, Jinxun Chen, Tao Wang, Jie Liu, Xiang Li, Jiding Li and Xingzhong Cao, A facile approach to construc hierarchical dense membranes via polydopamine for enhanced popylene/nitroge separation, *Journal of Membrane Science* http://dx.doi.org/10.1016/j.memsci.2015.10.046

A facile approach to construct hierarchical dense membranes via polydopamine for enhanced propylene/nitrogen separation

Manquan Fang [a], Haotian Zhang [a], Jinxun Chen [a], Tao Wang [a], Jie Liu [a], Xiang Li [a], Jiding Li [a] *, Xingzhong Cao [b]

a. The State Key Laboratory of Chemical Engineering, Department of Chemical Engineering, Tsinghua University, Beijing 100084, China.

b. Key Laboratory of Nuclear Radiation and Nuclear Energy Technology, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China.

* Corresponding author, E-mail: lijiding@tsinghua.edu.cn, Tel: +86-10-62782432

Abstract

Bio-inspired polydopamine has been established as a facile and versatile surface modification agent in recent years, many applications have been found such as tailoring the wettability of membrane surfaces, constructing antifouling or antimicrobial surface and serving as a platform for further modifications. To our knowledge, these applications were almost all aimed at liquid systems. For gas separations, however, polydopamine (PDA) was rarely investigated and exploited in literature. In this work, we report a facile method to fabricate ultrathin reverse-selective gas separation membranes (bigger molecules permeate more) via self-polymerization and adhesion of