www.elsevier.com/locate/memsci

Blending of Compatible Polymer of Intrinsic Microporosity (PIM-1) with Tröger's Base Polymer for Gas Separation Membranes

Shasha Zhao, Jiayou Liao, Danfeng Li, Xiaodong Wang, Nanwen Li

PII: S0376-7388(18)31172-4
DOI: https://doi.org/10.1016/j.memsci.2018.08.010
Reference: MEMSCI16384

To appear in: *Journal of Membrane Science*

Received date: 29 April 2018
Revised date: 7 August 2018
Accepted date: 10 August 2018

Cite this article as: Shasha Zhao, Jiayou Liao, Danfeng Li, Xiaodong Wang and Nanwen Li, Blending of Compatible Polymer of Intrinsic Microporosity (PIM-1) with Tröger's Base Polymer for Gas Separation Membranes, *Journal of Membrane Science,* https://doi.org/10.1016/j.memsci.2018.08.010

Blending of Compatible Polymer of Intrinsic Microporosity (PIM-1) with Tröger's Base Polymer for Gas Separation Membranes

Shasha Zhao[a,b], Jiayou Liao[b*], Danfeng Li[c], Xiaodong Wang[a*], Nanwen Li[b*]

[a]Key Laboratory of Coal Science and Technology of the Ministry of Education and Shanxi Province, Taiyuan University of Technology, Taiyuan, 030024, China

[b]State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China

[c]Strategy Study and Engineering Consultancy Centre (SSECC), Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan, 030001, China

wangxiaodong@tyut.edu.cn

linanwen@sxicc.ac.cn

liaojiayou@sxicc.ac.cn

ABSTRACT

The novel gas separation membranes have been prepared by blending highly gas permeable polymer of intrinsic microporosity (PIM-1) and with Tröger's Base polymer (TB). Interestingly, it was found firstly that the PIM-1 polymer was miscible with Tröger's Base polymer in any proportion. It was assumed that the excellent compatibility between two polymers could be attributed to the interaction between CN group in PIM-1 and N atoms in Tröger's Base moieties, as confirmed by ATR-IR results. Thus, flexible, tough and transparent blending membranes (PIM/TB) at different compositions between PIM-1 and TB were obtained by solution casting. The SEM results further