Static adsorption of protein-polysaccharide hybrids on hydrophilic modified membranes based on atomic layer deposition: anti-fouling performance and mechanism insight

Ning Li, Yu Tian, Jianhui Zhao, Jian Zhang, Lingchao Kong, Jun Zhang, Wei Zuo

www.elsevier.com/locate/memsci

PII: S0376-7388(17)32649-2
DOI: https://doi.org/10.1016/j.memsci.2017.11.063
Reference: MEMSCI15759

To appear in: *Journal of Membrane Science*

Received date: 15 September 2017
Revised date: 23 November 2017
Accepted date: 25 November 2017

Cite this article as: Ning Li, Yu Tian, Jianhui Zhao, Jian Zhang, Lingchao Kong, Jun Zhang and Wei Zuo, Static adsorption of protein-polysaccharide hybrids on hydrophilic modified membranes based on atomic layer deposition: anti-fouling performance and mechanism insight, *Journal of Membrane Science,* https://doi.org/10.1016/j.memsci.2017.11.063

Static adsorption of protein-polysaccharide hybrids on hydrophilic modified membranes based on atomic layer deposition: anti-fouling performance and mechanism insight

Ning Li, Yu Tian*[1], Jianhui Zhao, Jian Zhang, Lingchao Kong, Jun Zhang, Wei Zuo

State Key Laboratory of Urban Water Resource and Environment (SKLUWRE), School of Environment, Harbin Institute of Technology, Harbin, 150090, China

***Corresponding Author.** Tel.: + 8613804589869, e-mail: hit_tianyu@163.com (Yu Tian).

Abstract

Initial membrane fouling affects fouling behavior and characteristic significantly. Static adsorption investigation contributes to intensively understand the initial fouling process. In order to determine the superior anti-fouling material prepared by atomic layer deposition, the TiO_2, Al_2O_3 and ZnO modified membranes were successfully fabricated, characterized by XPS, XRD and SEM and then employed for static adsorption of BSA and SA foulants. More importantly, the anti-fouling mechanism was interpreted by adsorption isotherms and thermodynamics. Results showed that the adsorption amount of BSA and SA on PVDF membrane decreased by 43.2% and 73.0%

[1] No.73, Huanghe Road, Nangang District, Harbin City, Heilongjiang Province, P.R. China.