Supporting Information

for

Bioinspired synthesis of SiO_2/pDA-based nanocomposite imprinted membranes with sol-gel imprinted layers for selective adsorption and separation applications

Yilin Wu,[1,*] Li Chen,[1] Jian Lu,[1] Xinyu Lin,[1] Jia Gao,[1] Peng Lv,[2] Xinlin Liu,[3] Minjia Meng,[1] Yongsheng Yan[1,*]

[1]Institute of Green Chemistry and Chemical Technology, School of Chemistry and Chemical Engineering, Jiangsu University, Zhenjiang 212013, China

[2]School of Material Science and Engineering, Jiangsu University, Zhenjiang 212013, China

[3]School of Energy and Power Engineering, Jiangsu University, Zhenjiang 212013, China

Self-polymerization of dopamine

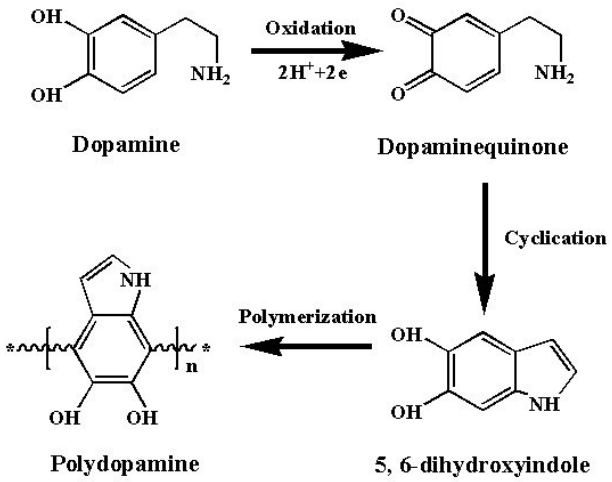

Figure S1. Possible reaction mechanism for dopamine polymerization.

Dopamine could polymerize and stick on all kinds of organic and inorganic surfaces through the formation of strong covalent and noncovalent bonds with surfaces. The polymerization mechanism of dopamine was proposed as interaction of a noncovalent self-assembly and a covalent polymerization through oxidation of catechol to dopaminequinone under an aerobic and alkaline condition and then further oxidizes and polymerizes through deprotonation and intermolecular Michael addition reaction to form a cross-linked homopolymer. The functional groups such as catechol, amine, and imine can serve as both the starting points for covalent modification with desired molecules and the anchors for the loading of transition metal ions, which can further realize the emergence of diverse hybrid materials by virtue of its powerful reducing capability toward these metal ions under basic conditions.[1-2]

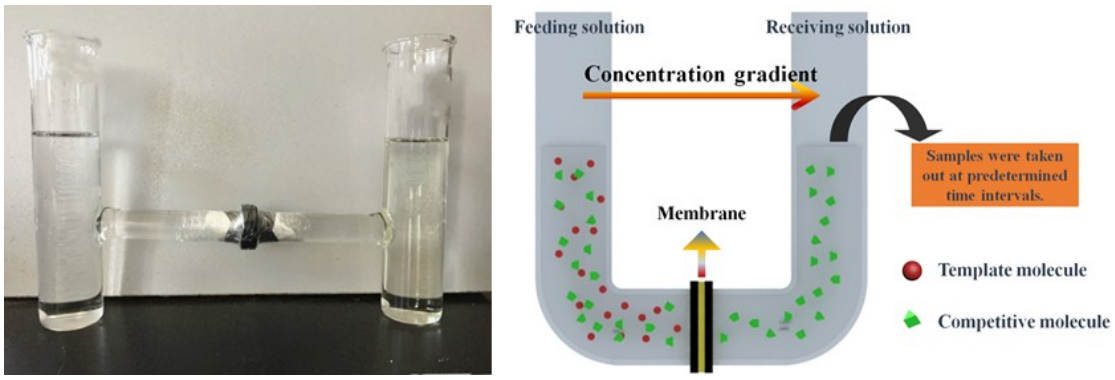

Figure S2. The H-model tube installation of permeation experiment.

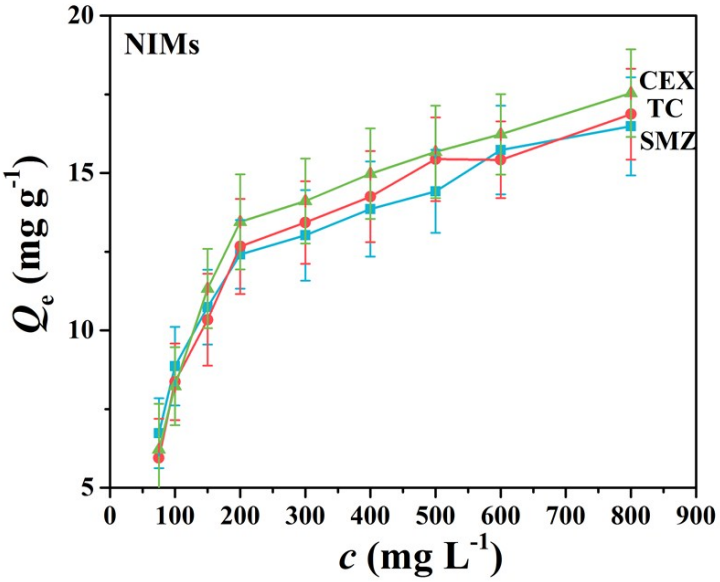

Figure S3. Selective adsorption results of NIMs toward different molecules.

References

[1] H. Lee, S. M. Dellatore, W. M. Miller, P. B. Messersmith, Mussel-inspired surface chemistry for multifunctional coatings, Science 318 (2007) 426-430.

[2] H. Lee, Y. Lee, A. R. Statz, R. Rho, T. G. Park, P. B. Messersmith, Substrate-independent layer-by-layer assembly by using mussel-adhesive-onspired polymers, Adv. Mater. 20 (2008) 1619-1623.