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## Supporting information

### **Exploration of using thermally responsive polyionic liquid hydrogels as draw agents in forward osmosis**

*Yufeng Cai<sup>a,b</sup>, Rong Wang<sup>b,c</sup>, William B. Krantz<sup>c,d</sup>, Anthony G. Fane<sup>b,c</sup>, and Xiao Hu<sup>a,b,c,\*</sup>*

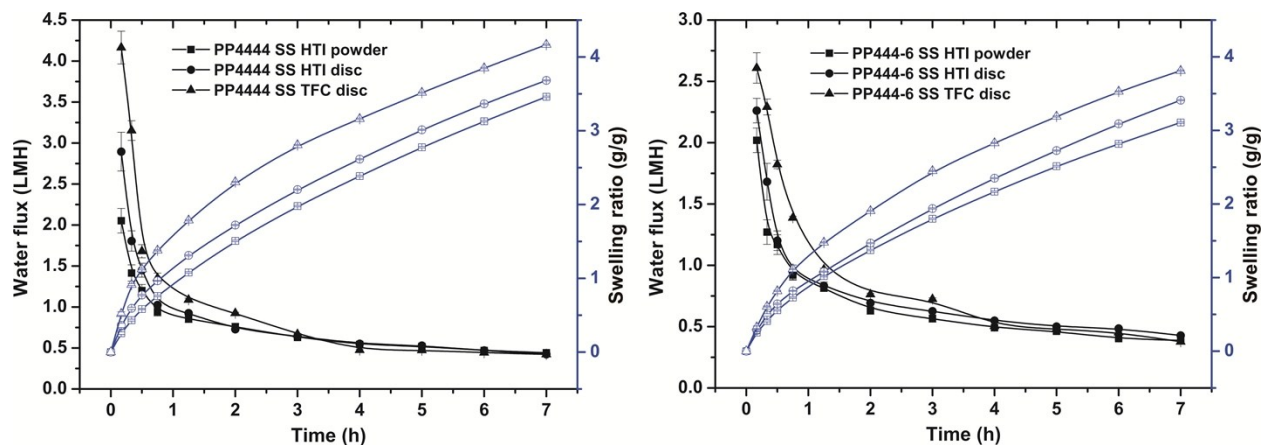
<sup>a</sup>School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore

<sup>b</sup>Singapore Membrane Technology Centre, Nanyang Environmental & Water Research Institute, 1 cleantech loop, Singapore

<sup>c</sup>School of Civil & Environmental Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore

<sup>d</sup>Department of Chemical and Biological Engineering, University of Colorado, USA

20 **Influence of hydrogel contact condition and FO membrane on swelling**  
 21 **performance**

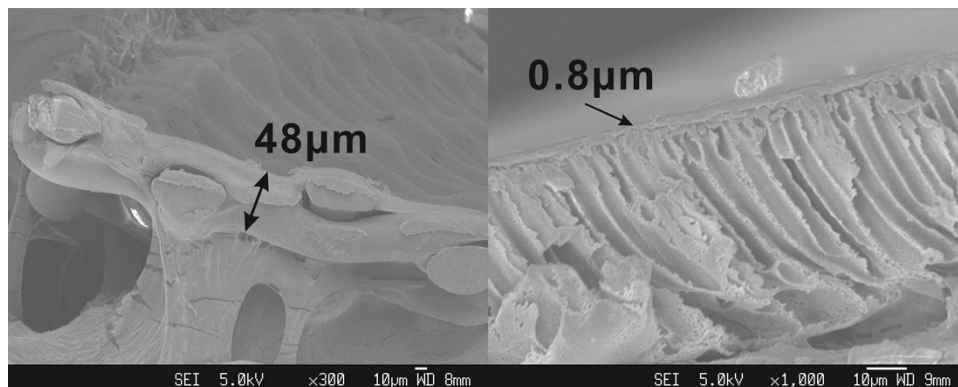


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23 Fig S1. The influence of hydrogel interstitial volume and FO membrane on swelling performance of PP4444 SS and  
 24 PP444-6 SS.

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26 **FESEM images of FO membranes**



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28 Fig S2. FESEM images of cellulose triacetate membrane from HTI (left) and thin film composite (TFC) membrane (right).  
 29 The thickness of selective layer of each membrane was indicated.

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### 34 Liquid water fraction in hydrogel deswelling

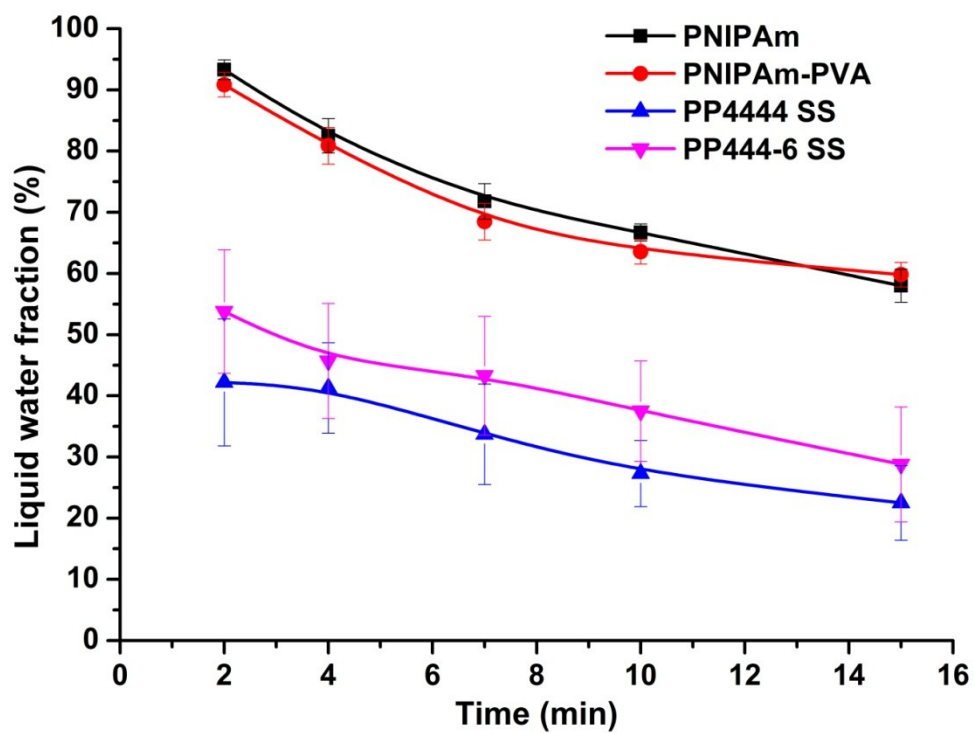


Fig. S3 Fraction of liquid water released in regeneration process.

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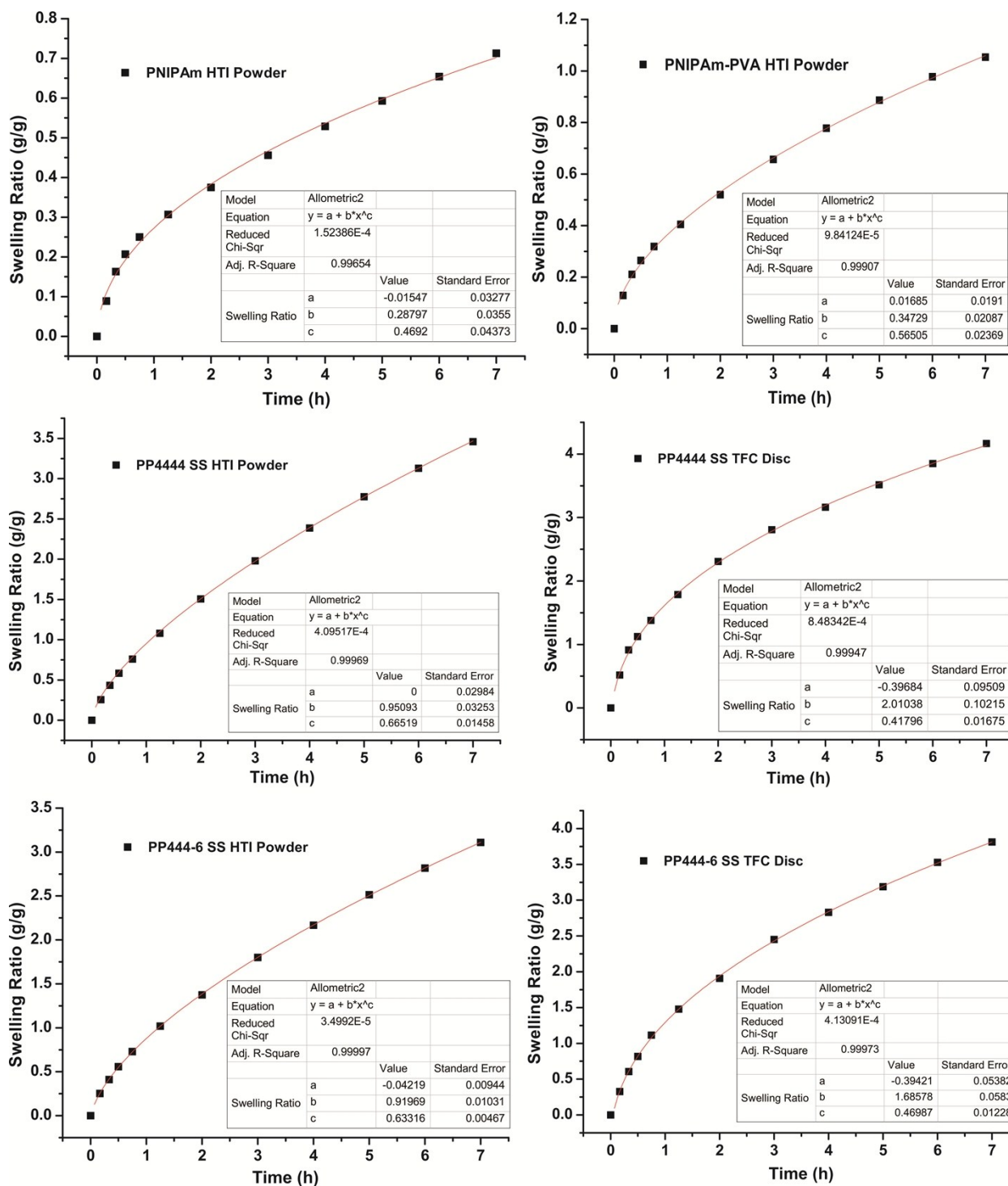
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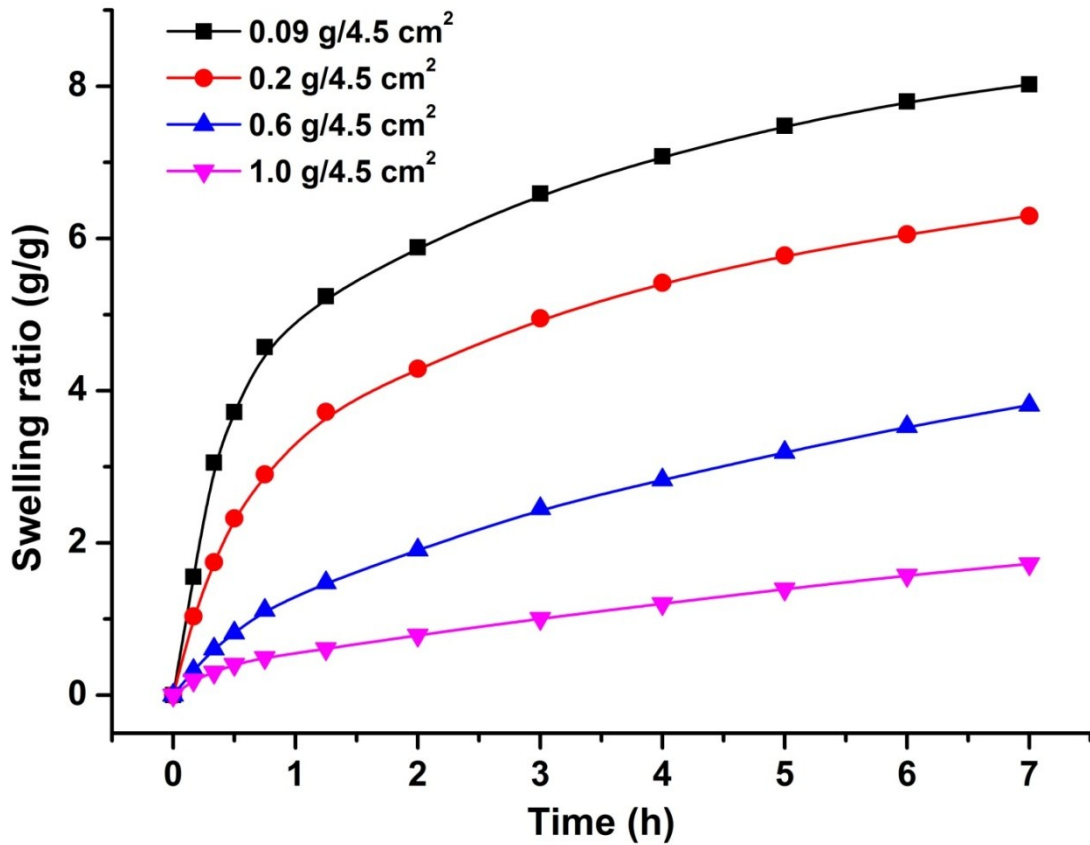
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## 42 Fitting of the correlation between swelling ratio and FO time



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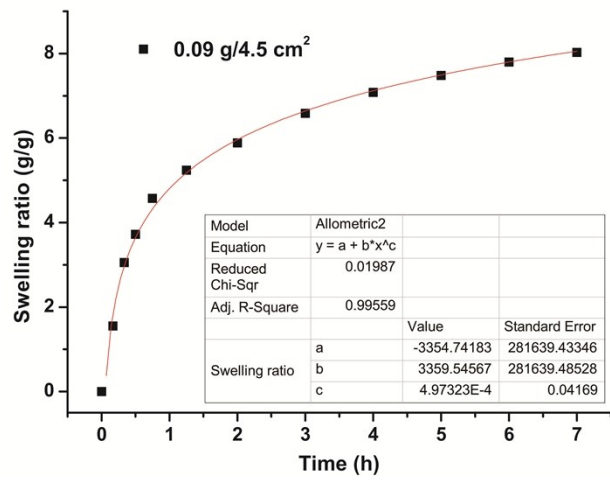
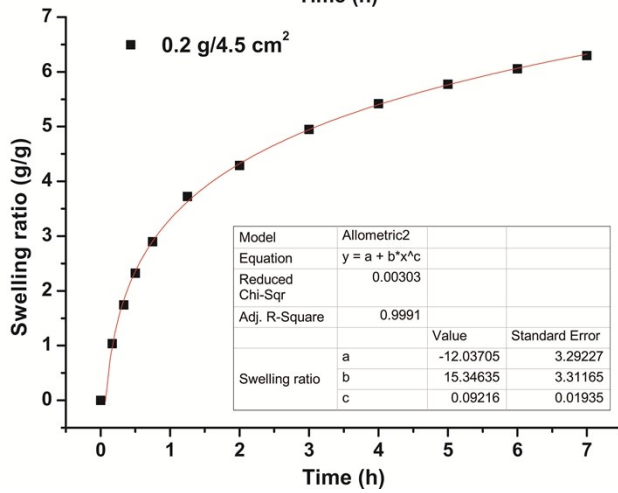
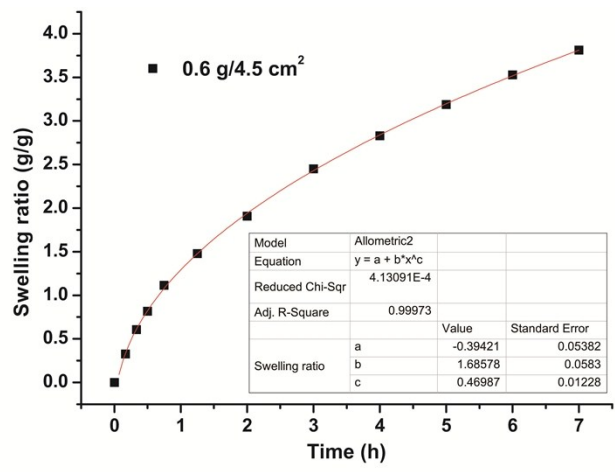
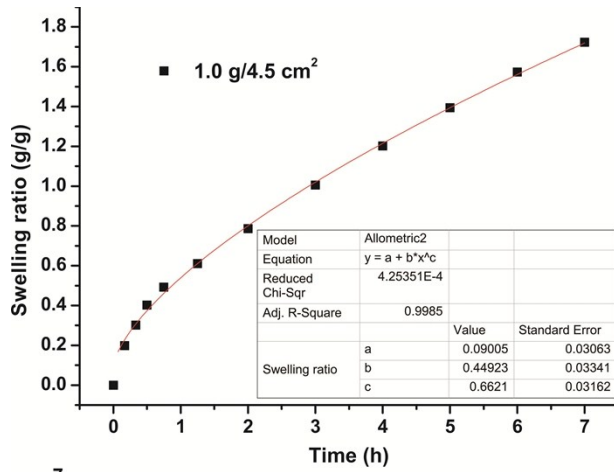
Fig S4. Swelling ratio versus FO time fitting for different hydrogel in powder form with HTI membrane and in disc form with TFC membrane.



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45 Fig S5. The influence of area density on the hydrogel FO performance. The hydrogel was PP444-6 SS in disc form. FO  
 46 membrane was TFC membrane.

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Fig S6. Swelling ratio versus FO time fitting for P444-6 SS with different area density. The hydrogel was in disc form using TFC membrane.