

New Environmentally Friendly Approach for Modification of poly(ethersulfone) Membranes

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Scope and targets

To design and optimize an enzyme-catalyzed modification method for PES membranes, and to evaluate the behavior of the modified membranes.

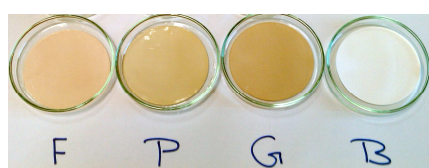
Materials & Methods

The membranes were modified at room temperature and in aqueous medium. The degree of modification was qualitatively monitored from the coloration of the modified membranes (CIELAB), see Figure 1. XPS, IRRAS, IR-GIR, SEM (Figure 2), water flux measurements (Figure 3a), and protein repellence tests (Figure 3b) were used for membrane characterization.

Results

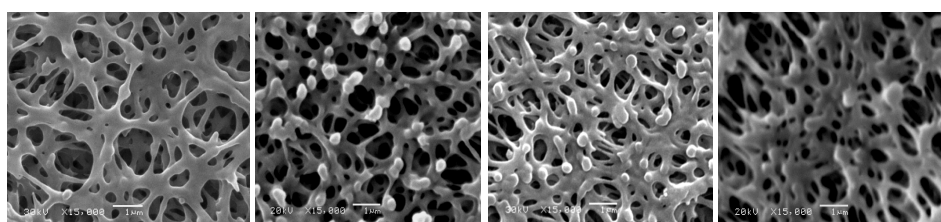


a



b

Figure 1. a) Illustration of color changes during reaction; vessels contain original solution, tubes contain liquid after reaction, and the dishes contain the dried modified membranes. b) Color changes of modified whole circular membranes (F, P, and G grafted acids, wet membranes) relative to blank membrane (B).



Blank

Figure 2. Examples of PES membranes with different grafted layers.

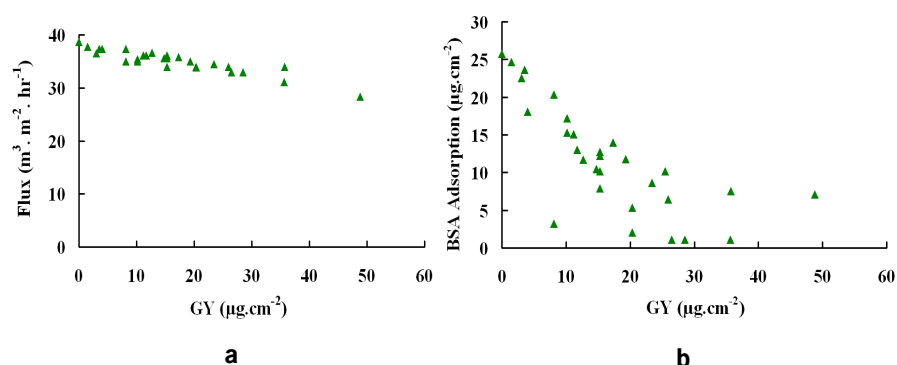


Figure 3. a) Flux and b) BSA adsorption as function of grafting yield (GY).

Conclusions

Enzyme-catalyzed modification is an eco-friendly alternative for modification of PES membranes, as reflected in our preparation of **high flux low fouling membranes**.

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