

Supplemental Information

Study on Structure Design and Performance of a Novel Braid Reinforced and Thermostable Poly(m-phenylene isophthalamide) Hollow Fiber Membranes

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Figure

Figure S1

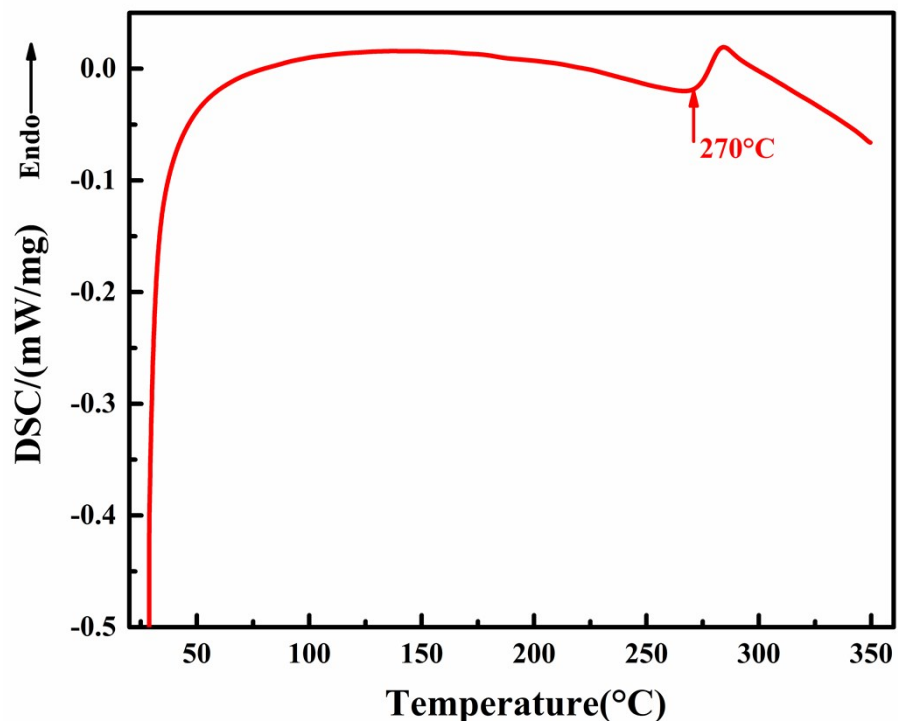


Figure S1. DSC curve of PMIA

Figure S2

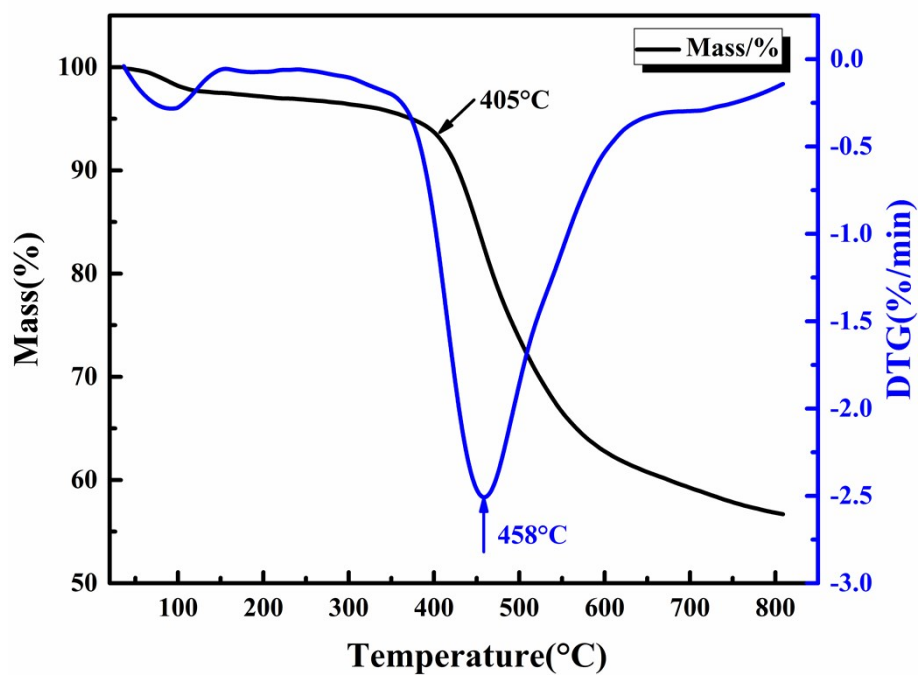


Figure S2. TGA curve of PMIA

Figure S3

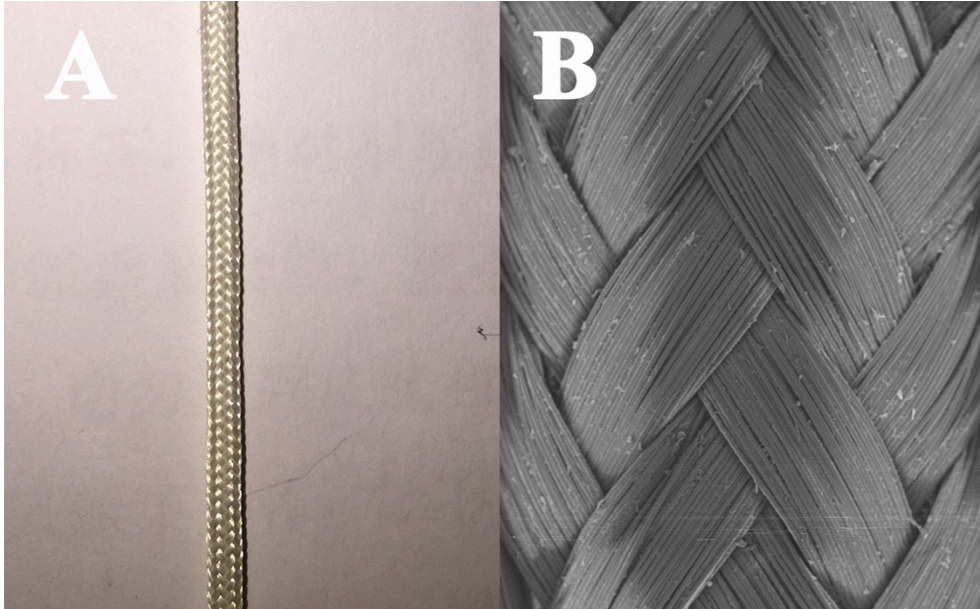


Figure S3. The photograph of reinforced braid

A: digital photograph; B: SEM photograph

Figure S4



Figure S4. The digital photograph of braiding machine

Figure S5

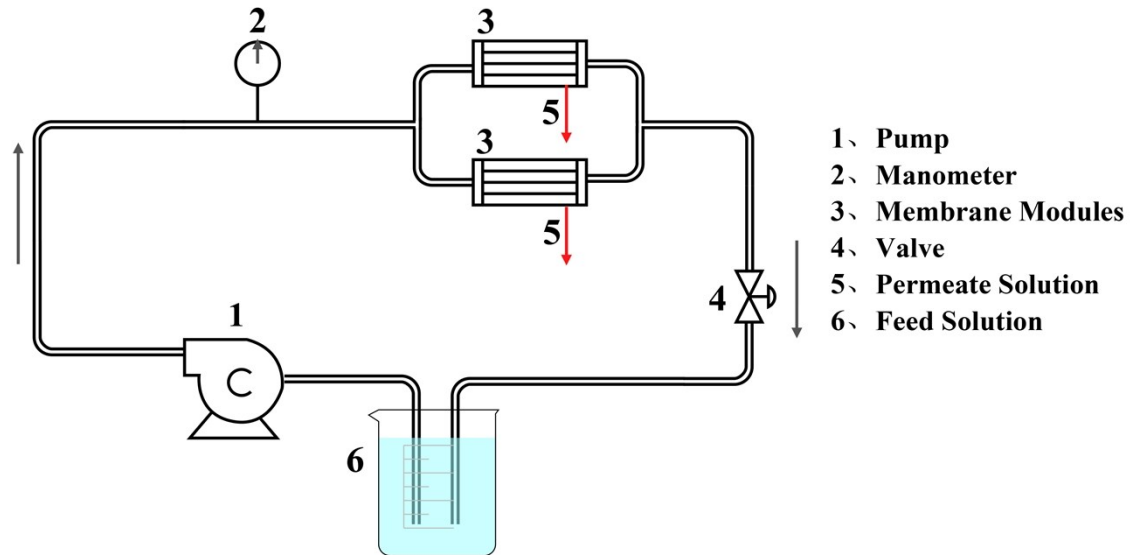


Figure S5. Schematic diagram of cross-flow filtration apparatus

Figure S6

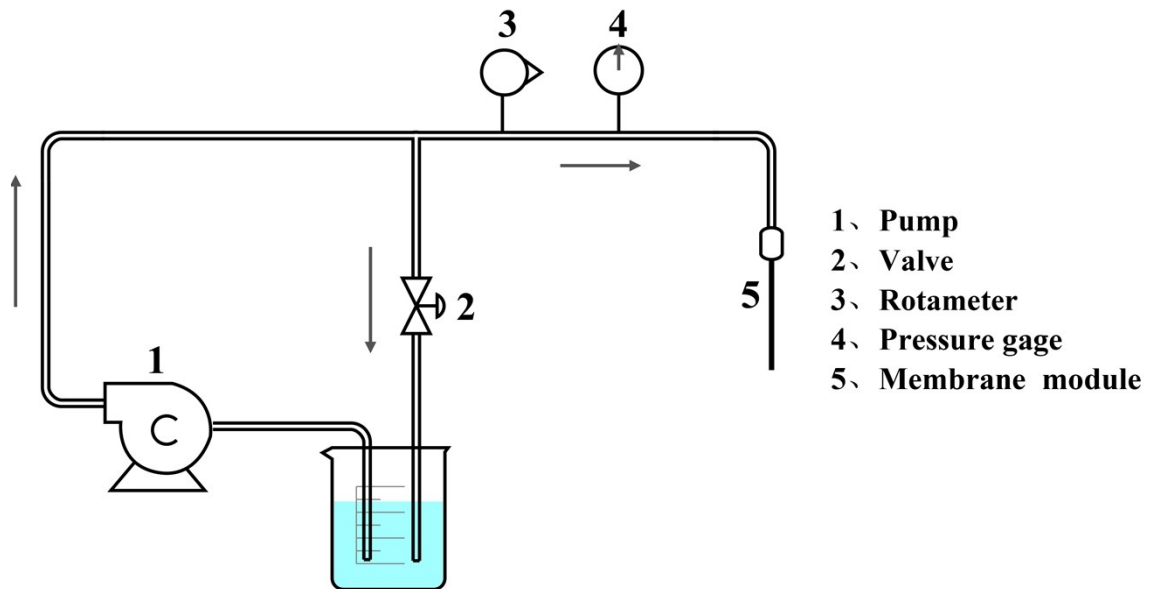


Figure S6. Schematic diagram of bursting test

Figure S7

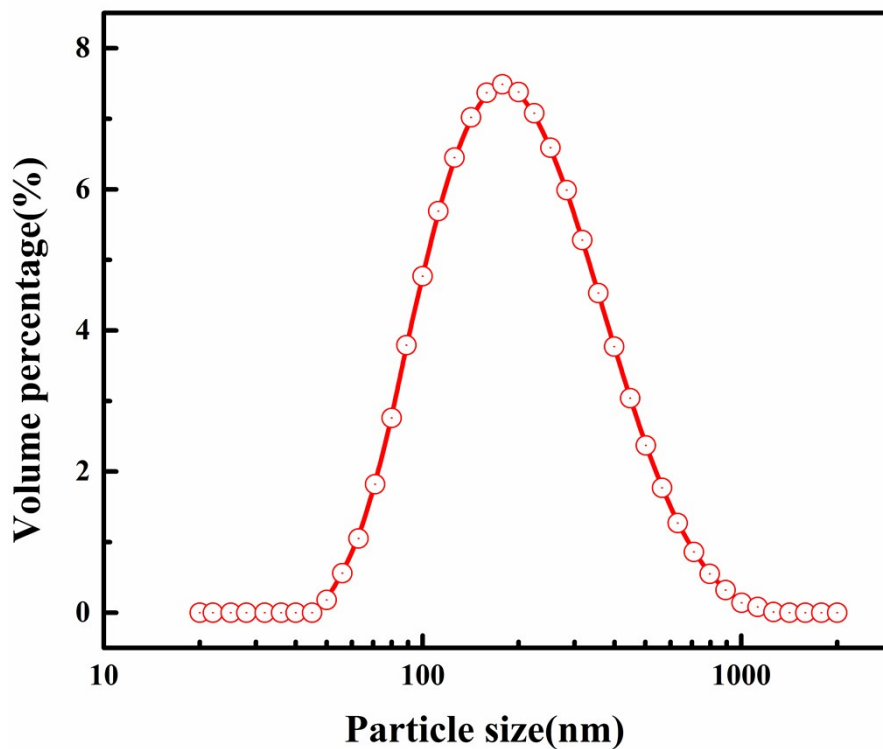


Figure S7. The particle size distribution of ink solution.

Figure S8

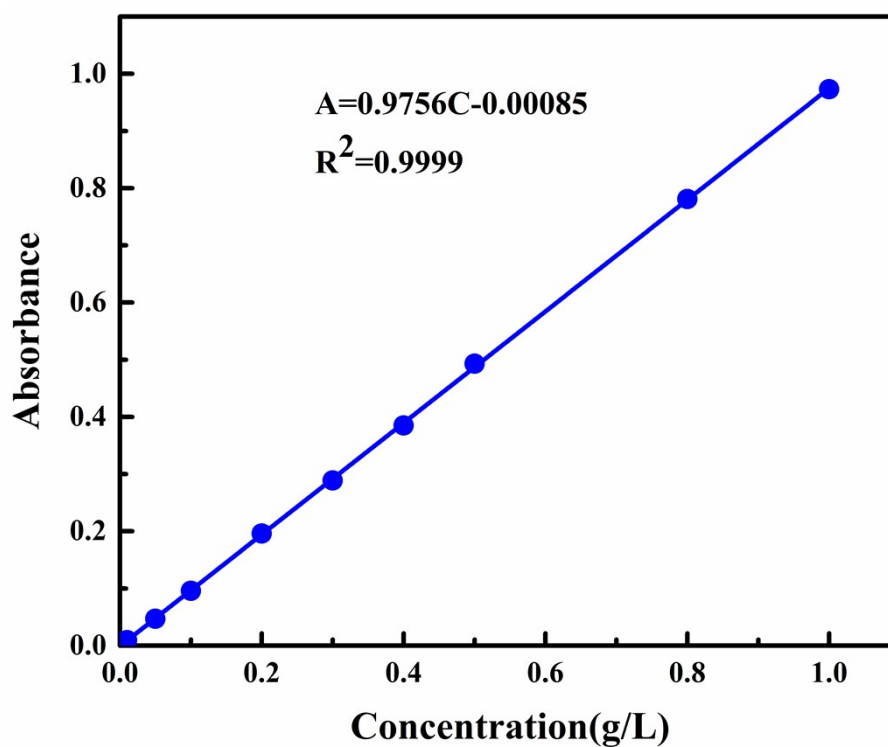


Figure S8. Standard concentration-absorbance curve of ink solution

Figure S9

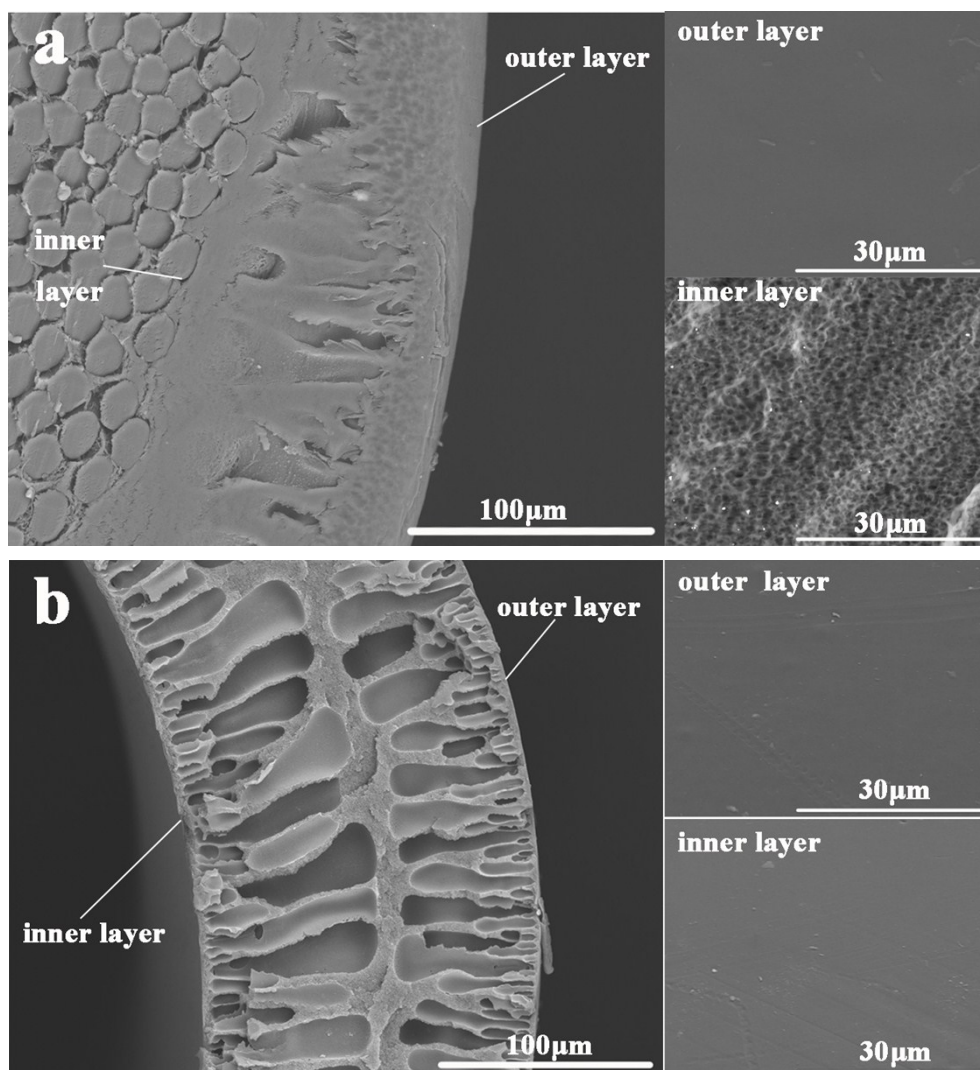


Figure S9. Morphology of cross section, inner layer and outer layer.

a: BR PMIA hollow fiber membranes; b: PMIA hollow fiber membranes.

Table

Table S1 The Parameters of PMIA and PET filaments

Sample	Specification (denier)	Density (g/cm ³)	Breaking elongation(%)	Breaking strength(cN/dtex)
PMIA	200D	1.37	34.1±1.3	3.88±0.12
PET	200D	1.38	18.1±1.2	7.67±0.24

Table S2 The characterizations of BR PMIA hollow fiber membranes

Sample	Inner diameter(mm)	Outer diameter(mm)	Separation layer thickness(μm)
PMIA5	1.17±0.059	2.051±0.024	71±17
PMIA8	1.168±0.045	2.092±0.026	92±12.3
PMIA10	1.16±0.059	2.098±0.037	141±21.9
PMIA15	1.19±0.064	2.103±0.023	188.8±32.6
M2	1.064±0.083	2.226±0.035	163.8±31.17
M3	1.083±0.06	2.123±0.022	100±22.2