

## Electronic Supplementary Information

The detailed calculation of Equation (4) is shown as follow:

Supposing the number of PSf-g-PLA chain is as the same as PSf chain, the weight ratio of PSf-g-PLA can be calculated by (1)

$$w_{PSf-g-PLA} = M_{PSf-g-PLA} \times \frac{w}{M_{PSf}} \quad (1)$$

$M_{PSf-g-PLA}$  means the molecular weight of PSf-g-PLA, can be calculated by (2)

$$M_{PSf-g-PLA} = A \times B + C \quad (2)$$

where A is the average molecular weight of PLA after aminolysis, B is the quantity of the PLA grafted to one of the PSf chain, C is the molecular weight of PSf.

Supposing the PLA chain after aminolysis is equal, therefore,

$$A = \frac{1-w}{\frac{1-w}{M_{PLA}} + \frac{w}{M_{0PSf}} \times v} \quad (3)$$

$$B = \frac{M_{PSf}}{M_{0PSf}} \times v \quad (4)$$

$$C = M_{PSf} \quad (5)$$

Therefore,

$$w_{PSf-g-PLA} = \left( M_{PSf} + \frac{1-w}{\frac{1-w}{M_{PLA}} + \frac{w}{M_{0PSf}} \times v} \times \frac{M_{PSf}}{M_{0PSf}} \times v \right) \times \frac{w}{M_{PSf}}$$

after simplification,

$$w_{PSf-g-PLA} = w * \frac{(1-w) * M_{0PSf} + M_{PLA} * v}{(1-w) * M_{0PSf} + w * v * M_{PLA}}$$

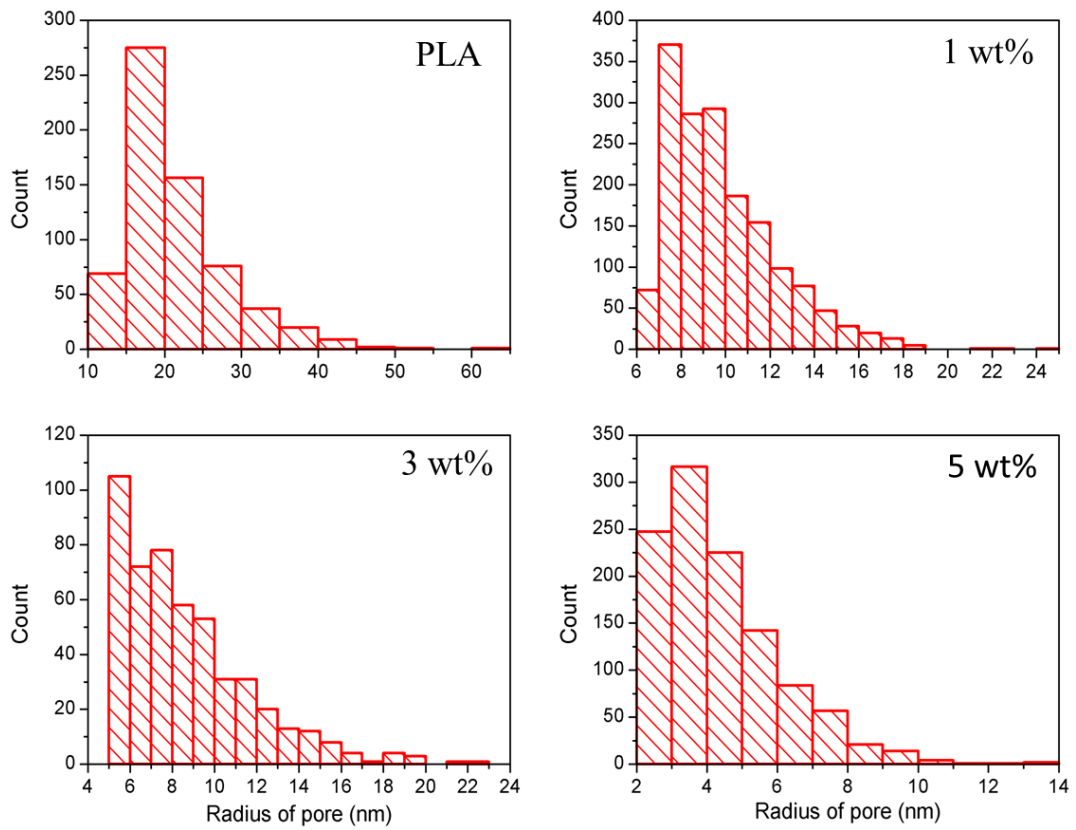


Fig.S1 Pore size distribution of membranes with different PSf-EDA-26 content

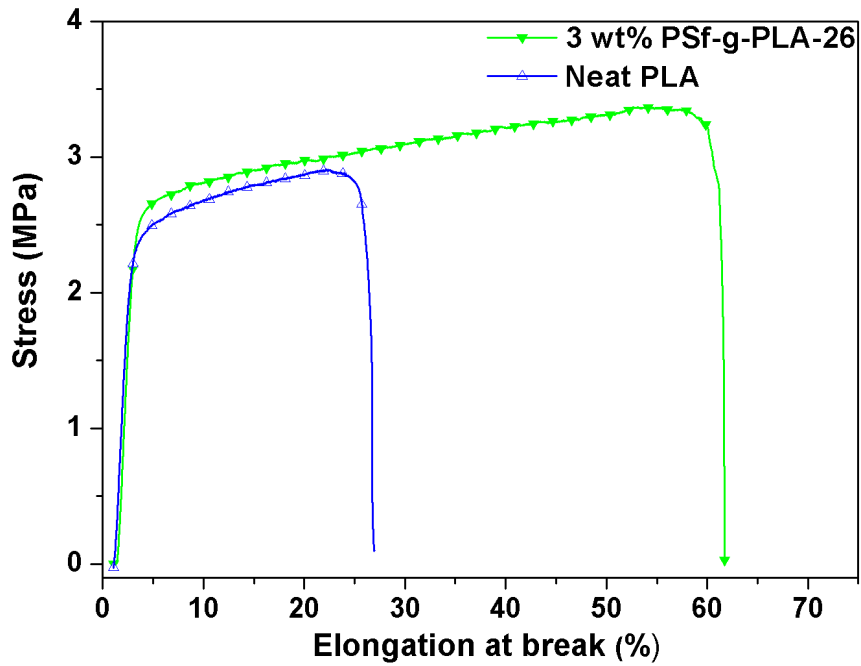


Fig.S2 Comparison of PLA and modified membranes on tensile properties