

## Supplemental Information for

### A novel nanofiltration membrane inspired an asymmetric porous membrane for selective fractionation of monovalent anions in electro dialysis

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#### 1. Determination of current density in the process of permselectivity measurement and electro dialysis

The novel modified porous membranes were prepared and used as monovalent anion selective membranes in electro dialysis. It is important to choose appropriate current density to conduct permselectivity measurements. As for anion exchange membranes, we can measure the limited current density to decide the current density to be used in electro dialysis. However, in this work these porous modified membranes are not ion exchange membranes in the real sense, so it is difficult to measure the limited current density. Therefore, the permselectivity of Cl<sup>-</sup> against SO<sub>4</sub><sup>2-</sup> was measured under different current density conditions by using a PPPiT membrane. From Fig.S1, it is easy to find that when current density is 5.1 mA /cm<sup>2</sup>, the permselectivity is the highest (3.1) than other five different current density conditions (1.3,1.34,2.07,2.29 and 2.57). So in this work, we chose the current density of 5.1mA/cm<sup>2</sup> as the optimal current density in the selective electro dialysis.

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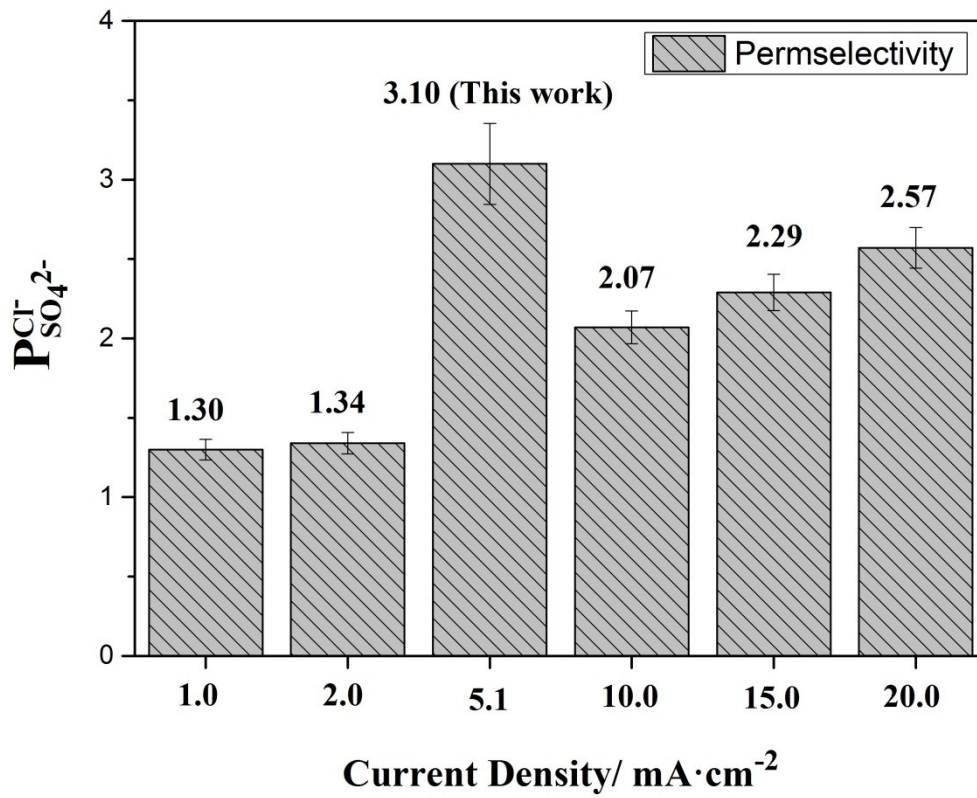


Fig.S1 The permselectivity of Cl<sup>-</sup> against SO<sub>4</sub><sup>2-</sup> under different current density at time of 1h during the selective electro dialysis