

Electronic Supporting Materials

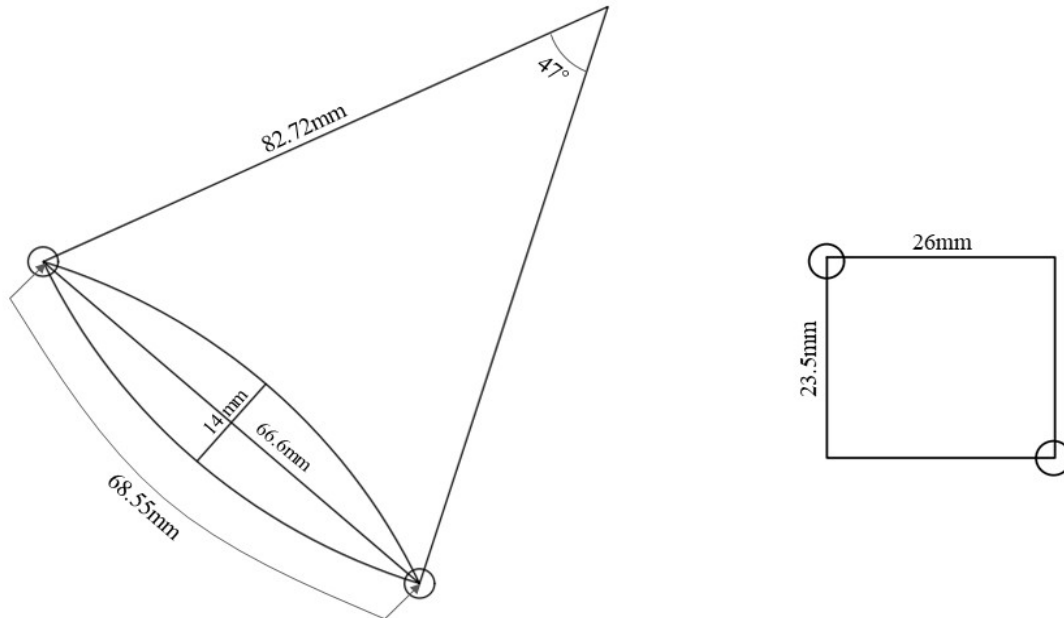


Fig. S1 Geometric data for spindle chamber (left) and rectangular chamber (right)

Description of the choice of dimensions: For the spindle-shaped cavity, the chamber we used for normal experiments was a rectangular cavity with a long diagonal position of the inlet and outlet in the Figure, and in the CFD simulation, we found that there are dead zones on both sides of the rectangle, so we selected the chamber shape shown in the Figure according to the simulation results. The shape was formed symmetrically by two arcs that pass exactly through the point in the middle of the rectangular chamber where the fluid flow velocity was close to 0 and the center of the inlet and outlet. For ease of study and comparison, we reduced the original rectangular isolation to a smaller rectangle with an area equal to the spindle.

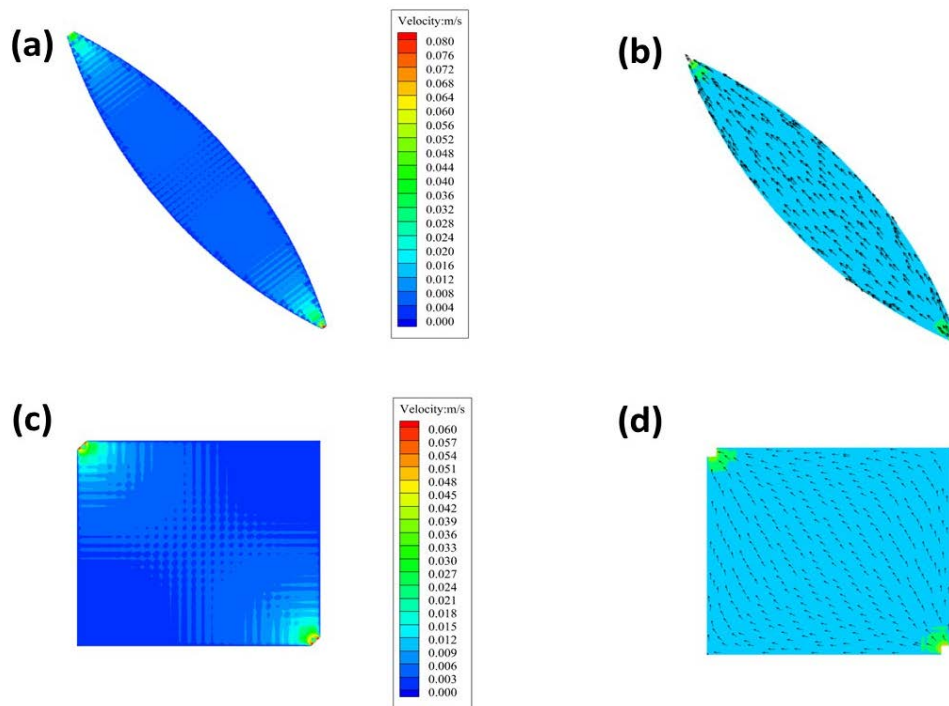


Fig. S2 Velocity profiles(a-b) and fluid flow patterns(c-d) of two different chambers at a feed flow rate of 1.6 mL/min

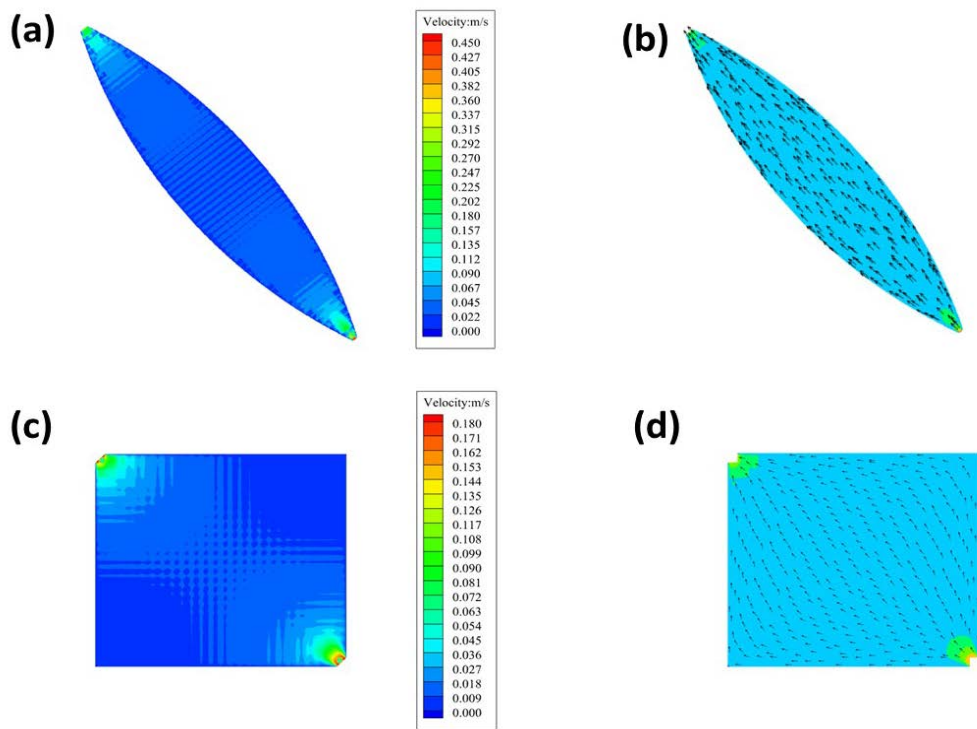


Fig. S3 Velocity profiles (a, b) and fluid flow patterns (c, d) of two different chambers at a feed flow rate of 4.8 mL/min

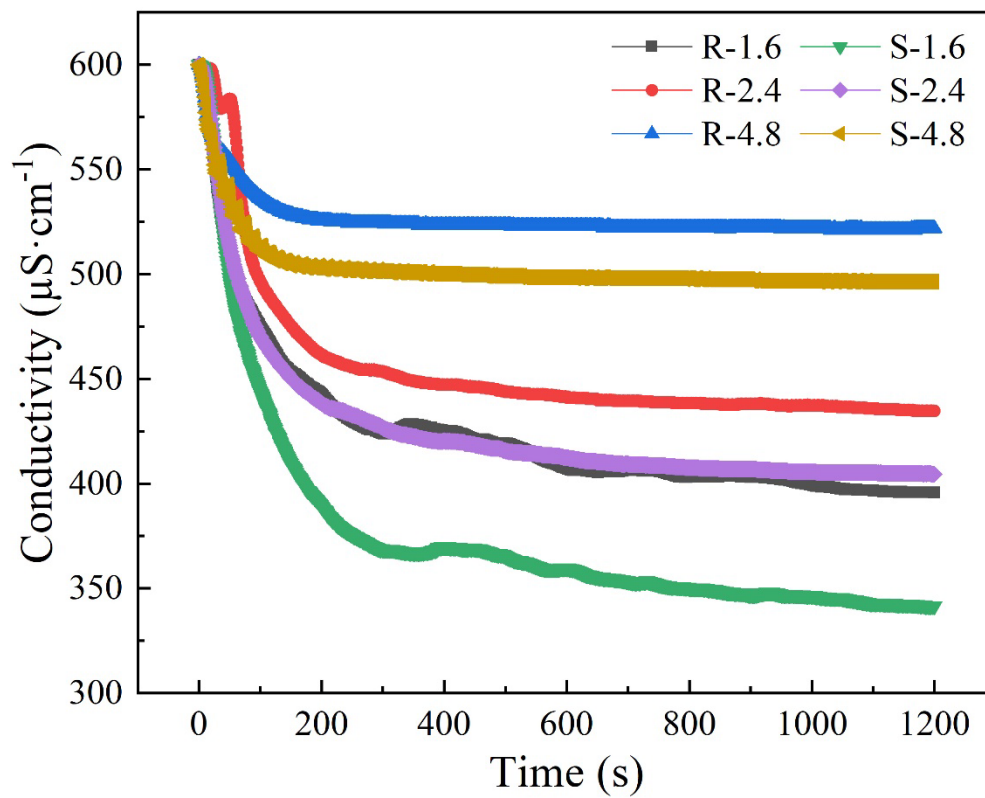


Fig. S4 Effluent conductivity at different flow rates

Text S1. Specific calculations of average salt removal rate (ASRR) and normalized energy consumption (ENRS), where Eq. (1) is SRE and Eq. (2) is ENRS

$$SRE = \frac{(C_0 - C_t)}{C_0} , \quad (1)$$

where C_0 and C_t ($\mu\text{mol/mL}$) were the influent salt concentration and the steady-state effluent salt concentration, respectively,

$$ASRR = \frac{(C_0 - C_t) \times q}{A} , \quad (2)$$

where q was the desalination chamber flow rate (mL/min), and A was the effective contact area between the flow electrode and IEM (m^2).