

Figure S1. SEM surface images of (a) PVA and (b) SEM cross-section image of PVA/CA-H4.

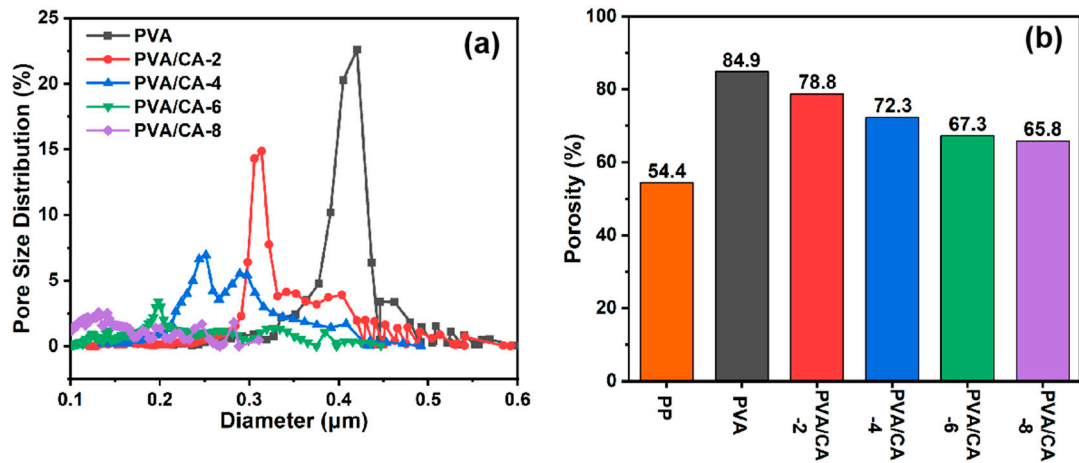


Figure S2. (a) Pore size distribution and (b) porosity of different membranes before thermal treatment.

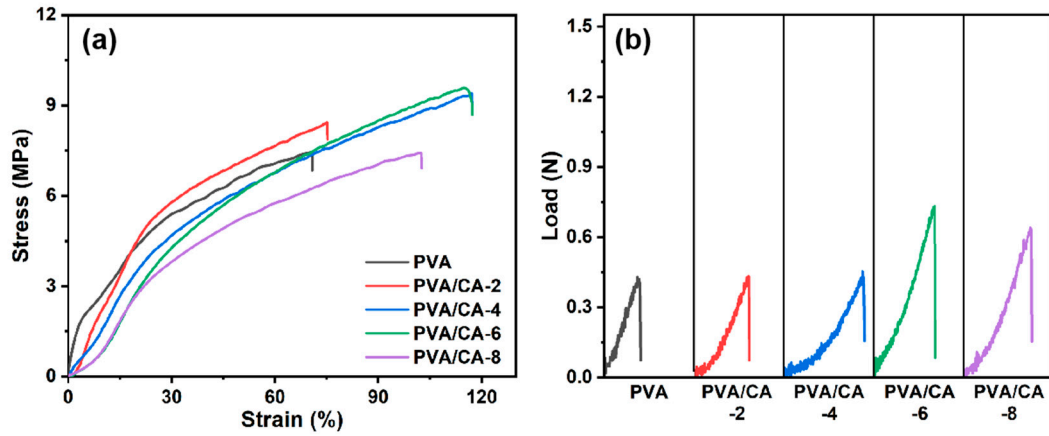


Figure S3. (a) Stress-strain curves and (b) puncture load-displacement curves for different PVA/CA composite membranes before thermal treatment.

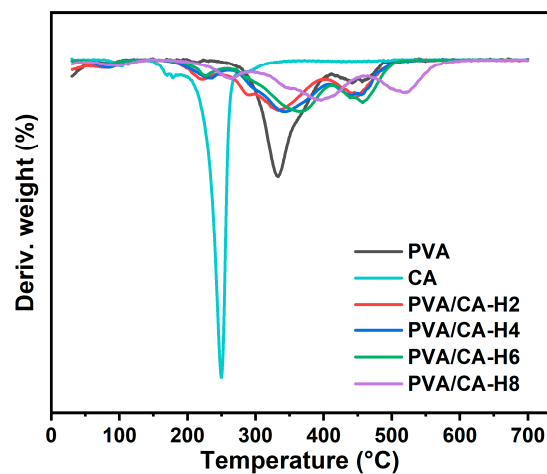


Figure S4. DTG curves of CA and different separators in heating scan.

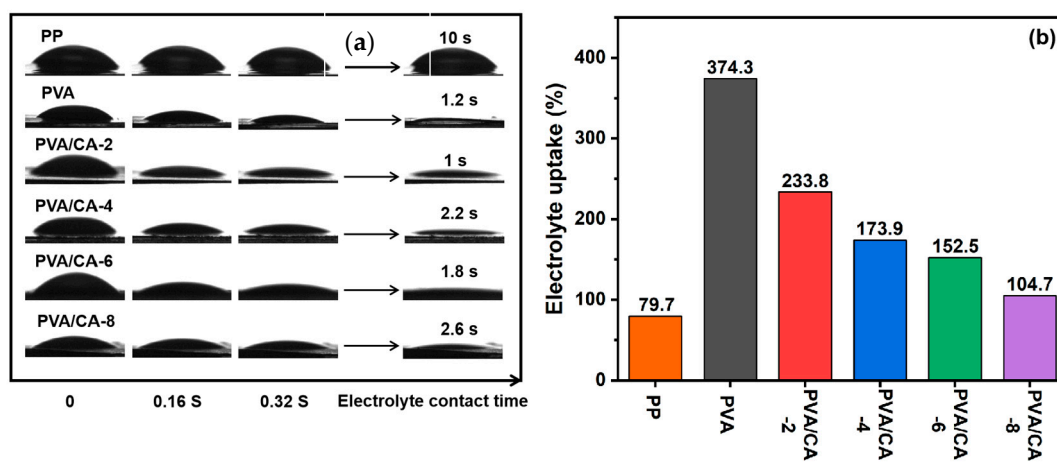


Figure S5. (a) Electrolyte contact angle changing with time and (b) the electrolyte uptake for different PVA/CA composite membranes before thermal treatment.