Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

Polydopamine-Coated Cellulose Microfibrillated Membrane as High Performance Lithium-ion Battery Separator

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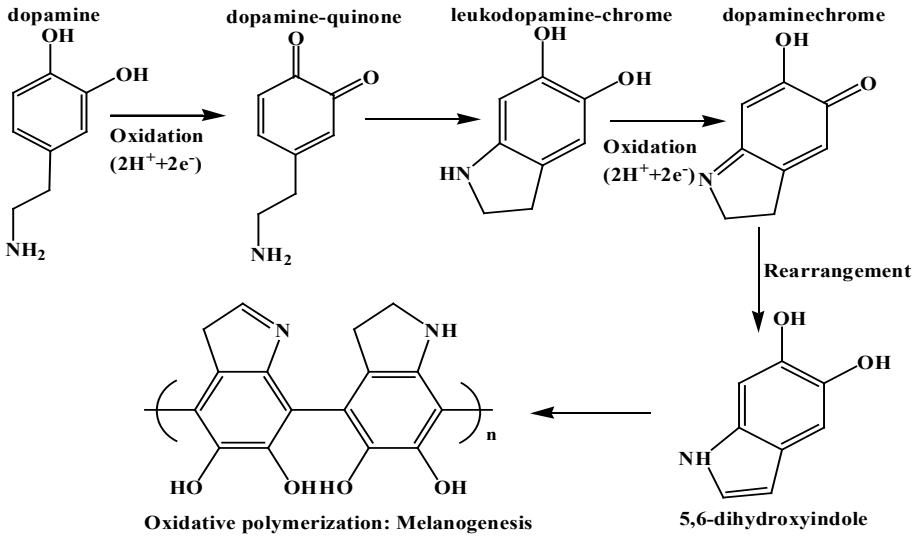

Figure S1. Suggested mechanism for dopamine polymerization by alkaline pH-induced oxidation.

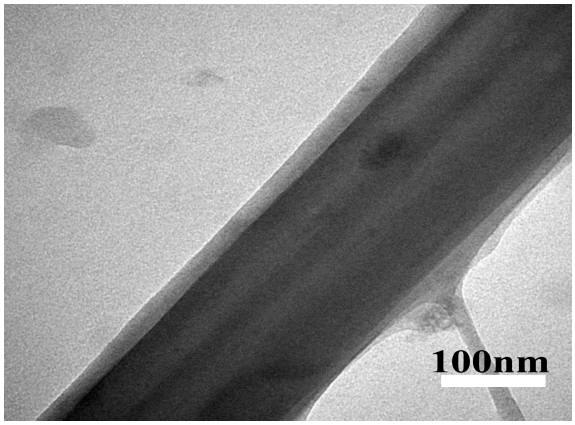

Figure S2. TEM image of the polydopamine-coated cellulose fiber.

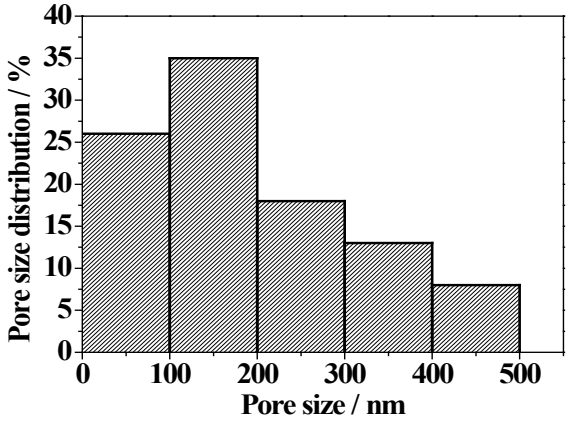

Figure S3. Pore distribution of CPD separator.

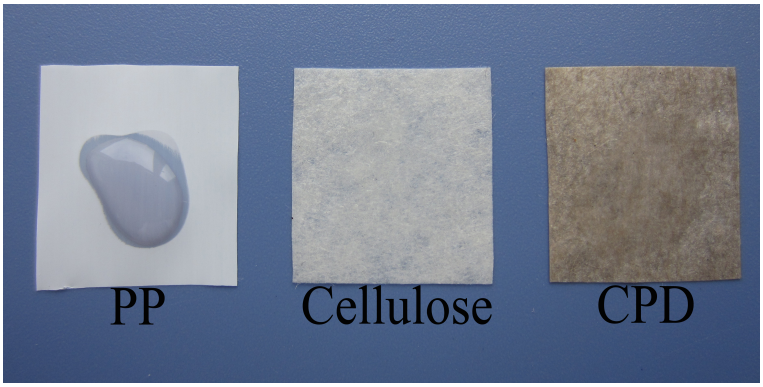

Figure S4. Photograph showing liquid electrolyte wettability (1 M $LiPF_6$ in EC/DMC (1/1, v/v)).

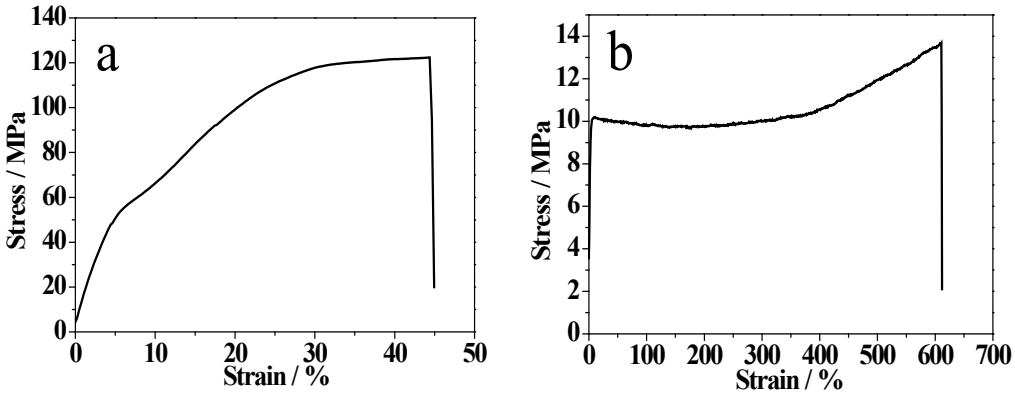

Figure S5. Stress-strain curves of PP separator (a) at machine direction and (b) and transverse direction.

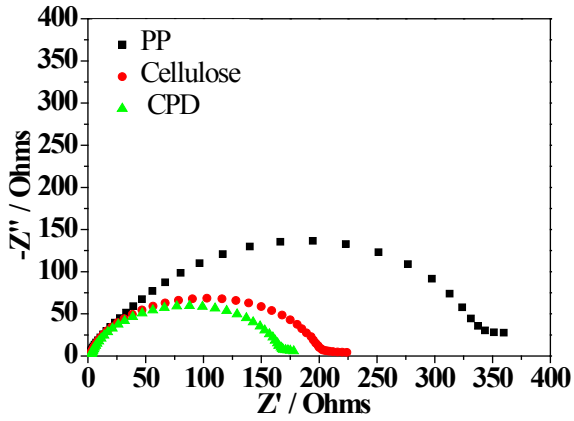

Figure S6. Nyquist plots of Li/electrolyte-soaked separator/Li cells at room temperature.

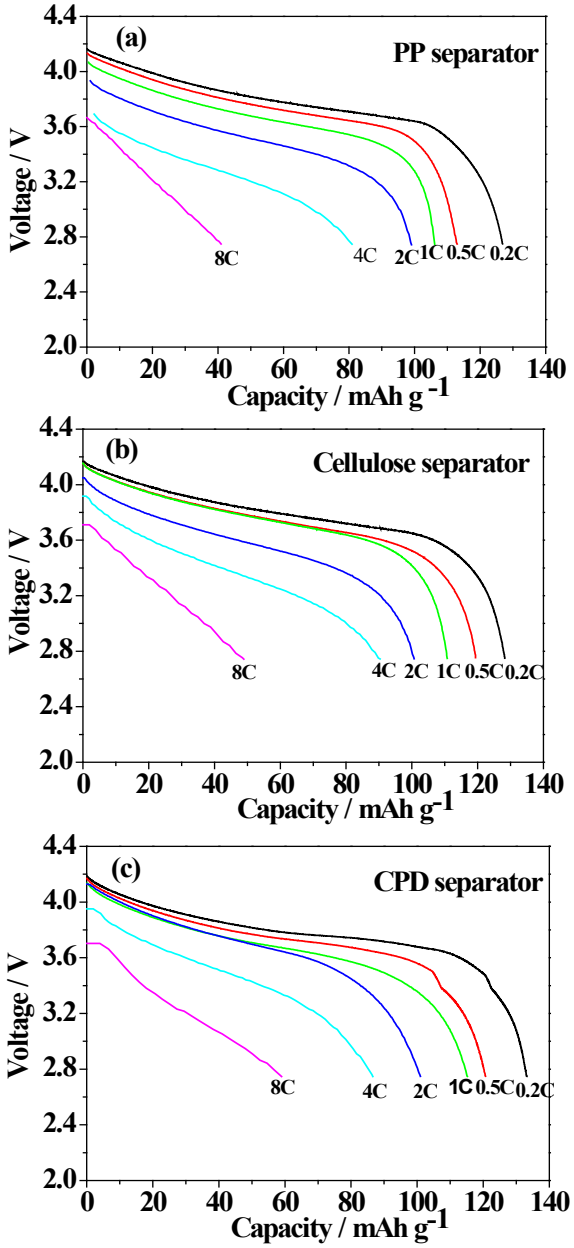

Figure S7. Discharging profiles of cells using (a) PP separator, (b) cellulose separator, (c) CPD separator at different current densities.

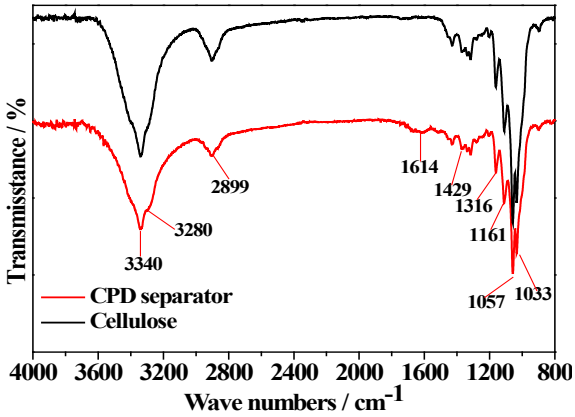

Figure S8. FT-IR spectra of CPD separator and cellulose separator.

Compared with that of cellulose separator, the FT-IR spectra of CPD separator has two new peaks at 3280 cm^{-1} and 1614 cm^{-1} which could be assigned to the stretching vibration of -NH2. Therefore, FT-IR spectrum provides an additional evidence for the formation of polydopamine film on the cellulose.