

Bio-inspired Materials for Rechargeable Batteries

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As lithium ion batteries are expanding their applications toward green vehicles and stationary utility grids, their performance regarding energy density, power capability, lifetime, and safety are on demand to improve further. Inspired by mussels' exceptional wet-resistant holdfast onto versatile substrates, in this presentation, I will present modified separators and binders that play critical roles in the performance of lithium ion batteries. The exceptional adhesion properties enhance various cell properties, particularly rate performance, cycle life, and safety.

Reference.

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3. "Excellent cycle lives of lithium metal anodes in lithium ion batteries by separator coating with mussel-inspired polydopamine", Adv. Energy, Mater, 2012, 2, 645-650
4. "Mussel-inspired polydopamine treated polyethylene separators for high power Li-ion batteries", Adv. Mater. 2011, 23, 3066-3070.