

Interfacially polymerized polyamide interlayer to improved stability of sulfur cathodes in Li-S battery

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Rechargeable lithium-sulfur batteries present/possesses bright future as next generation energy storage devices but severe decrease in capacity due to polysulfide shuttling has prevented its wide spread application. Suppressing the polysulfide shuttling by coating the sulfur electrode with physical barrier to minimize/prevent polysulfide diffusion is widely accepted strategy. Here, we report a facile and industrially scalable method of coating thin polyamide layer over sulfur electrode by utilizing interfacial polymerization technique. Thin and porous polyamide layer prevent bulky polysulfide from shuttling while allowing Li^+ to access the sulfur-based cathode. As a result, the polyamide coated cathodes exhibit ~64.2% capacity retention after 1000 cycles at 1C with 0.035% decay per cycle.