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Porous polyetherimide membranes with tunable morphology for lithium-ion battery

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Abstract

Polyetherimide (PEI) porous membranes with tunable morphology are constructed via a typical phase inversion method and applied in lithium-ion batteries (LIBs). The morphology of PEI membranes is adjusted by introducing hydrophilic additives, polyvinyl pyrrolidone (PVP), in the cast solution. The obtained PEI porous membranes show typical sponge-like microstructure and more connected and bigger pores are formed in the membranes with the increase amount of PVP. Under LIBs test condition, batteries with PEI membranes show superior thermal stability, good electrolyte wettability, and tunable ion conductivity and rate performance. As a result,