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A low cost shutdown sandwich-like composite membrane with superior thermo-stability for lithium-ion battery

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Abstract

A separator plays the key role in solving the safety issues of lithium-ion batteries. The currently used polyolefin separators are seriously limited by their low thermal stability. In this paper, a sandwich-like composite membrane with super-high thermal stability was designed and fabricated. In the design, a porous polybenzimidazole (PBI) layer was introduced on both sides of a PE separator by a typical phase inversion method. The porous PBI layer on both sides of the PE ensured high ion conductivity, high thermal stability and the nonflammable property. Meanwhile, this