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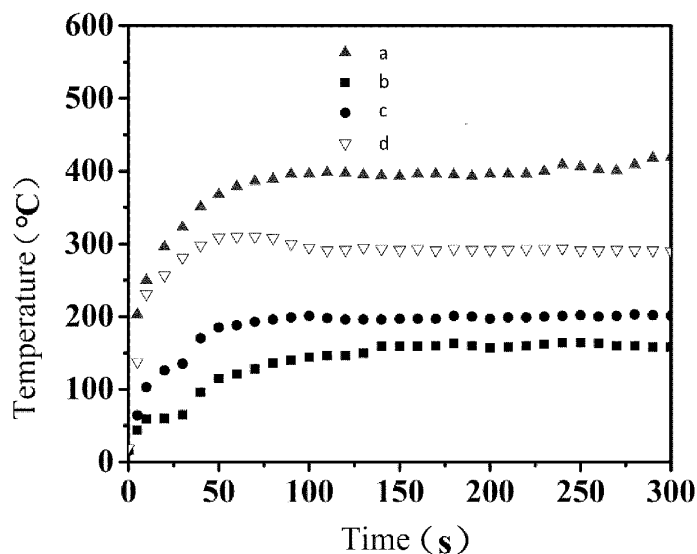
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(54) Title: MULTIFUNCTIONAL THERMAL PROTECTION COMPOSITE COATING AND PREPARATION METHOD AND APPLICATION THEREOF

Fig. 3



(57) Abstract: The present invention relates to the technical field of safety protection of commercial lithium-ion batteries, and in particular, to a multifunctional thermal protection composite coating and a preparation method and application thereof. The multifunctional thermal protection composite coating consists of an organic-inorganic hybrid coating and an inorganic ceramic coating sequentially disposed on a surface of a base, wherein the materials for preparing the organic-inorganic hybrid coating comprise at least a polymer compound, an inorganic filler, and a solvent, and the materials for preparing the inorganic ceramic coating comprise at least an aqueous emulsion, a silicate, and an inorganic compound. The composite coating can controllably form a composite coating structure including a thermal conduction weakening layer, an air layer, and a thermal convection weakening layer during the fire process. While ensuring that the overall coating thickness is thin to meet the actual requirements of an aluminum housing of a battery, the design of three-layer

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composite structure can effectively weaken thermal conduction and thermal convection, and fully realize functions of high temperature resistance, flame retardant, and thermal insulation.