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Review

Recent progress in solid-state electrolytes for alkali-ion batteries

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## Recent progress in solid-state electrolytes for alkali-ion batteries

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**Abstract:** Solid-state electrolytes have a lot of advantages, including the inhibition of alkali metal dendrite growth, the elimination of liquid electrolyte leakage, the improvement of safety, the enhancement of energy density and power density, and the potential application in flexible electronics. Therefore, solid-state electrolytes have become one of the hottest topics in energy-storage research area. An up-to-date review on solid-state electrolytes is of not only scientific significance but also technological imperative. Here, recent progress in solid-state electrolytes for alkali ion batteries is summarized. Through this comprehensive review and the comparison of different solid-state electrolytes, we hope it can give a clear figure of the state-of-art status and the development trend of the future solid-state electrolytes.

**Keywords:** Solid-state electrolytes, Lithium-ion batteries, Sodium-ion batteries, Energy storage

### 1 Introduction

The electrochemical energy storage is one of the most imperative issues for human being in this century, due to the exhausting fossil energy, the increasing energy demand, the climate warming and the tidal phenomena of renewable energies [1]. It is recognized that the alka-

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