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Solid electrolytes and interfaces in all-solid-state sodium batteries: progress and perspective

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Abstract:

All-solid-state sodium batteries are promising candidates for the next generation of energy storage with exceptional safety, reliability and stability. The solid electrolytes are key components for enabling all-solid-state sodium batteries with high electrochemical performances. This Review discusses the current developments on inorganic and organic sodium ions solid electrolytes, including β/β'' -alumina, NASICON, sulfides, polymers and others. In particular, the structures, ionic conductivities and fabrications as well as electrochemical/chemical stabilities of solid electrolytes are discussed. The effective approaches for forming intimate interfaces between solid electrolytes and electrodes are also reviewed. And perspectives on future developments in the field of solid electrolytes and possible directions to improve interfacial contacts for future practical applications of all-solid-state sodium batteries are included.

Graphical Abstract

¹ W. H. and X. G. contributed equally to this paper.

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