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## Article

A review on energy storage devices based on rylene imide dyes: Synthesis, applications and challenges

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## Abstract

The storage of electric energy is of truly developing significance for our current, innovation based society, and novel battery and supercapacitor are in the focus of research. Rylene imide dyes are associated with the class of redox-active organic molecules, which shows high redox reactivity, remarkable specific capacity, outstanding electrochemical exchangeability and cycling stability. In this review, our focus is on the design, synthesis and progress of rylene diimide dyes towards electrochemical energy storage application. Furthermore, we have reviewed in detail the up-to-date growth of rylene imide dyes in lithium-, sodium-, magnesium-, and zinc-batteries along with depth usage of rylene dyes in supercapacitor applications. We have also summarized different rylene imide dyes with structural variations and their effect on electrochemical performance and analyzed them as excellent candidates in the energy storage devices.

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


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

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


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