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**Organic materials as polymer electrolytes for supercapacitor application**

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**Abstract**

Supercapacitors inevitably attract much attention among the scientific community and the general public since they combine the desirable characteristics of batteries and capacitors. The successful development of environmentally friendly supercapacitors is possible thanks to the organic materials obtained from renewable sources that are considered viable alternative materials for a safer and higher energy polymer electrolytes (PE) system. These organic polymer electrolytes (OPEs) are generally materials consisting of carbon and other atoms, such as oxygen, nitrogen, and halogen. This system is supramolecular in nature and produces high ionic conductivity when doped with ions. There is a myriad of future supercapacitor applications, including their use as supplementary energy sources in the electric grid, electric and microhybrid vehicles, and cell phone base stations. This chapter specifically discusses the recent progress made in the application of OPEs, their performance, challenges, and future directions in the context of supercapacitors. © 2023 Elsevier Ltd. All rights reserved.

**Author Keywords**

Electrochemical performance; ionic conductivity; organic materials; plasticizer; polymer electrolytes; specific capacity; supercapacitor

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