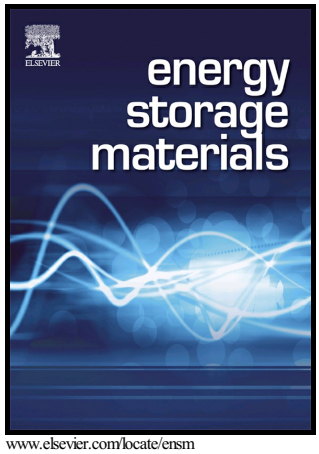

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Supercapacitors Utilising Ionic Liquids

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Abstract

Ionic liquids (ILs) can provide a broad range of opportunities for fabricating high-energy supercapacitors owing to their wide stable potential windows, flexibility in design, and ionic properties. Although their applicability had not been fully understood due to an impression that ILs are simply alternative electrolytes in the electrochemical systems, only a fraction of research works is currently focused on pure IL electrolytes, as the emerging attentions are towards new possibilities introduced by ILs. This review provides an overview of different roles of ILs in the development of new supercapacitors and attempts to link these works for a better understanding of the IL potentials and challenges. While manipulating the IL electrolytes can pave the path for the fabrication of practical supercapacitors, gel polymer electrolytes might have a better fortune in the commercial development of flexible devices. In addition to different roles of ILs as the electrolyte components, they can also modify the electrode material to enhance the supercapacitor performance.

Keywords: Ionic liquids; Polymerised ionic liquids; Supercapacitor; Pseudocapacitance; Gel polymer electrolyte; Porous carbon