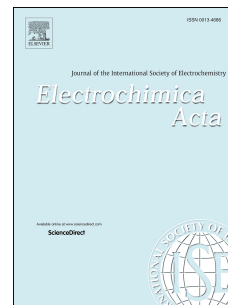


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Studies of Bipyridinium Ionic Liquids and Deep Eutectic Solvents as electrolytes for electrochromic devices

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Abstract

In this work, two bipyridinium di-cations based on [(allyl)₂bpy]²⁺ and [(C₁₀)₂bpy]²⁺ combined with halogenate (I or Br), bistriflimide ([NTf₂]) and dicyanamide [DCA] anions have been prepared and electrochemical characterized. These salts were studied using a conventional electrolyte (TBAP in acetonitrile) and alternative electrolyte based DES (LiTfO:6EG) for 3- and 2- electrodes configuration devices.

In the 2-configuration device, [(allyl)₂bpy][DCA]₂ and [(C₁₀)₂bpy][DCA]₂ showed different radical cation colorations particularly green and blue colors with different recovery times to original ones. In the case of [(C₁₀)₂bpy]I₂ a blue and a red-violet colorations attributed to the electrogenerated radical cation and the dimer respectively was obtained in agreement with previous literature. In parallel, bipyridinium based DES by suitable combination between [(C₁₀)₂bpy]X₂ and [(allyl)₂bpy]X₂ (X= Br, NTf₂, DCA) with several hydrogen bond donors in 2-electrode configuration devices have been also studied. DES based on

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