Electrochemistry of $[\text{Ru}(\text{bpy})_3]^{2+}$ and $[\text{Ru}(\text{phen})_3]^{2+}$ inserted in Nafion membranes studied in the ionic liquid HmImPF₆

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The electrochemical properties of tris(2,2'-bipyridine)ruthenium (II) dichloride ($[\text{Ru}(\text{bpy})_3]^{2+}$), and tris(1,10-phenanthroline)ruthenium (II) dichloride ($[\text{Ru}(\text{phen})_3]^{2+}$) complexes inserted in Nafion membranes were studied in the ionic liquid (IL) 1-hexyl-3-methylimidazolium hexafluorophosphate (HmImPF₆). The wide potential window provided by the IL, allows for the study of the redox properties without using organic solvents. The voltammetric patterns revealed reversible reduction waves for bpy and phen ligands and for the oxidation signal of Ru(II)/Ru(III) similar to those observed in aqueous and organic solvents.

Keywords: Nafion, $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{phen})_3]^{2+}$, ionic liquid, voltammetry.

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