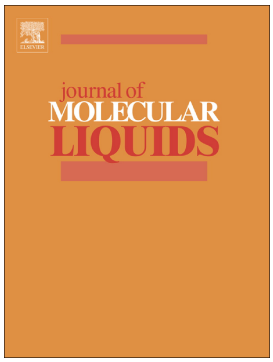

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$[Fe(CN)_6]^{4-}$/ $[Fe(CN)_6]^{3-}$ based Metal Organic Ionic Frameworks and impact of Fe^{2+}/ Fe^{3+} on Material-Medicinal-Properties

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Abstract

Study reports the preparation and material-medicinal-properties (MMPs) of Metal Organic Ionic Frameworks (MOIFs) of $[Fe(CN)_6]^{4-}$/$[Fe(CN)_6]^{3-}$ with dodecyltrimethylammonium bromide (DTAB), Tetradecyltrimethylammonium bromide (TTEB) and Hexadecyltrimethylammonium bromide (HTEB). MOIFs with $[Fe(CN)_6]^{4-}$ are found in liquid state as metallic ionic liquids while with $[Fe(CN)_6]^{3-}$ in solid state (SMOIFs). MOIFs were characterized with UV/Vis, FTIR, Raman and powder XRD measurements where the ionic interaction between coordination sphere of $[Fe(CN)_6]^{4-}$ /$[Fe(CN)_6]^{3-}$ and quaternary nitrogen of DTAB was analyzed. The thermal conductivity of LMOIFs has also been studied where an increase in conductivity with temperature is noticed, inferring their electrolytic property as well as thermal stability proposing them as electrolyte for Li/ Na ionic batteries. Viscoelastic property of MOIFs reveals the mechanical stability also inferring their use in ionic batteries. MOIFs have shown their dye degradation activity studied with Methyl Orange (MO) and Methyl Red (MR) depicting impact of Fe^{2+} and Fe^{3+}. MOIFs have shown their protein binding nature studied with BSA, analyzed