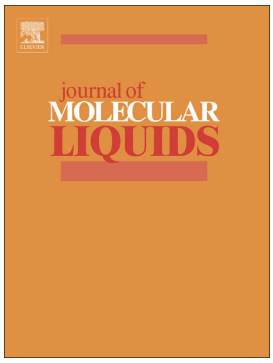

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Imidazolium Based Ionic Liquids' Structure and Optical Properties Influenced by Semiconductor Metal Oxide Thin Films

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Abstract

This paper reports the preparation of two protic ionic liquids (PILs) 2-methylimidazolium lactate and 2-methylimidazolium acetate through simple proton-transfer reaction by microwave irradiation method. This work further improves the influences of semiconductor metal oxides like CuO (p-type), ZnO (n-type) [two transition metal oxides] and SnO_2 (n-type a non transition metal oxide) over the synthesized PILs. These metal oxides were prepared by sol-gel method and doped over the synthesized ILs by making thin films by spin coating method. The focus of the present study is to learn how the band gap of p-type and n-type metal oxide varies when it is incorporated over the PILs. Their structure, optical properties and morphology were studied through FT-IR, UV-Visible, photoluminescence and XRD spectral studies.

Keywords: PILs, Metal Oxides, Spin-Coating, FT-IR, UV-Vis, XRD