Synthesis and Characterization of Ether-functionalized Imidazolium-based Ionic Liquids and their SO_2 absorption Properties

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A series of ether-functionalized imidazolium-based ionic liquids was prepared and characterized using FT-IR, ^{1}H-NMR, TGA and DSC. All of them were liquid at room temperature and thermally stable up to 300°C. Among the prepared ionic liquids, bis (trifluoromethanesulfonyl) imide ($[Tf_2N^-]$) and nonafluorobutyl sulfonate ($[C_4F_9SO_3]^-$) showed hydrophobicity, while other anion such as dicyanamide ($[(CN)_2N]^-$) and trifluoromethane sulfonate ($[CF_3SO_3]^-$) showed hydrophilicity. Using the prepared ionic liquids, SO_2 absorption/desorption experiments were conducted and compared their SO_2 absorption capacity.