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Separation of Organic Nitrogen Compounds by Supported Liquid Membranes Based on Ionic Liquids

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Heterocyclic compounds including nitrogen (quinoline, isoquinoline, and pyridine) were separated from *n*-heptane mixtures through supported liquid membranes using room temperature ionic liquids, based on 1-alkyl-3-methylimidazolium and quaternary ammonium salts. The organic nitrogen compounds selectively permeated the membranes. The differences in the structures of room temperature ionic liquids had little effect on the permeability of organic nitrogen compounds. Liquid membranes that used more hydrophilic room temperature ionic liquids yielded higher selectivity. Lower pyridine concentration and temperature caused increases in selectivity. Application of supported liquid membranes based on ionic liquids has potential for the separation process of organic nitrogen compounds and heptane.

Keywords: Ionic liquid, Supported liquid membrane, Organic nitrogen compound, Denitrogenation, Fuel oil