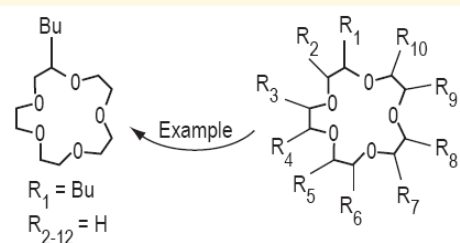
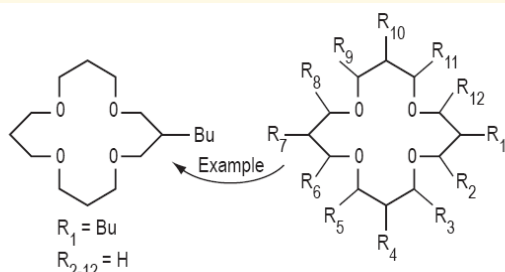


Synthesis of Ionic Liquids

Ionic Liquids for Chemical Separation Processes

Examples of suitable crown ethers



Summary

Chemical separation, such as processes producing alkanes from olefins, often requires series of distillation steps that are highly energy intensive.

Scientists at ORNL have developed new synthesis routes to the preparation of hydrophobic ionic liquids having cationic coordination of metal complexes. These synthesis routes lead to diverse ionic liquids with tunable chemical properties. These novel ionic liquids are useful for high throughput separation, such as production of alkanes from olefins. The ionic liquids are compatible with extraction processes and reaction schemes common to organic chemistry. They are water stable and immiscible with water, and are useful co-solvents in the separation of metal salts from contaminated aqueous systems, especially systems contaminated with soluble radioactive compounds.

Advantages

- High throughput separations requiring significantly less energy than conventional separation techniques
- Wide variety of ionic liquids based on inorganic cations complexed with neutral organic liquids
- Tunable ionic liquids for specific chemical properties
- Creates exothermic reactions -- requiring no solvent, heat or catalyst
- Readily soluble in organic solvents and immiscible in water

Patents

- Synthesis of Ionic Liquids, (UTB – ID 1332) [US Patent 7,423,164](#)

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