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Examination of the Potential of Ionic Liquids for Gas Separations

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Abstract:

Ionic liquids have received increasing interest in recent years for “green” synthesis and separations because they have essentially no vapor pressure. We have begun an

investigation of the removal of carbon dioxide in supported membranes. A saturated solution of CO₂ : N-methyl-2-pyrrolidone (NMP) yielded a high solubility in preliminary tests. The membranes used were based on conventional polyimides. An amine scrubbing process with amine scrubbing. A preliminary cost estimate for an ionic liquid scrubber indicates that an

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ionic liquid absorption process shows less favorable economics than a supported ionic liquid membrane or an amine scrubber. However, results indicate that a more comprehensive technical and economic assessment is warranted.

Related Research Data

CO2 Capture by a Task-Specific Ionic Liquid

Source: American Chemical Society (ACS)

Sulfonated polyimide/ionic liquid composite membranes for carbon dioxide separation

Source: Springer Science and Business Media LLC

Density and viscosity of several pure and water-saturated ionic liquids

Source: HAL CCSD

CO2 separation applying ionic liquid mixtures: the effect of mixing different anions on gas permeation through supported ionic liquid membranes

Source: ROYAL SOC CHEMISTRY

Supported Ionic Liquid Membranes and Facilitated Ionic Liquid Membranes

Source: AMERICAN CHEMICAL SOCIETY

A short history of ionic liquids—from molten salts to neoteric solvents

Source: Royal Society of Chemistry (RSC)

Electrochemical Separation and Concentration of <1% Carbon Dioxide from Nitrogen

Source: The Electrochemical Society

Comparative UV-Vis Studies of Uranyl Chloride Complex in Two Basic Ambient-

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Highly Selective Transport of Organic Compounds by Using Supported Liquid Membranes Based on Ionic Liquids

Source: Wiley

Ionic liquids: Innovative fluids for chemical processing

Source: Wiley

Acidic Gases Separation from Gas Mixtures on the Supported Ionic Liquid Membranes Providing the Facilitated and Solution-Diffusion Transport Mechanisms

Source: Multidisciplinary Digital Publishing Institute

Solvent extraction of strontium nitrate by a crown ether using room-temperature ionic liquid†

Source: Royal Society of Chemistry (RSC)

Click Reactions as a Key Step for an Efficient and Selective Synthesis of D-Xylose-Based ILs

Source: Multidisciplinary Digital Publishing Institute

From curiosities to commodities: ionic liquids begin the transition

Source: Royal Society of Chemistry (RSC)

Reaction kinetics of CO₂ absorption in to phosphonium based anion-functionalized ionic liquids

Source: Royal Society of Chemistry (RSC)

Solubilities and Thermodynamic Properties of Gases in the Ionic Liquid 1-n-Butyl-3-methylimidazolium Hexafluorophosphate

Source: American Chemical Society (ACS)

Low-Pressure Solubility of Carbon Dioxide in Room-Temperature Ionic Liquids Measured with a Quartz Crystal Microbalance

Source: American Chemical Society (ACS)

Synthesis of Water Soluble, Non-volatile and Photo-Responsive Flexible Dimeric Pyridine

Source: Wiley

Influence of Ionic Liquid on the Synthesis of Poly(2-vinylpyridine) by Aqueous Emulsion Polymerization

Source: Wiley

New Room-Temperature Ionic Liquids Based on 1,3-Diisopropyl-4-methyl-5-vinylimidazolium Hexafluorophosphate

Source: Wiley

Synthesis of Poly(2-vinylpyridine) by Aqueous Emulsion Polymerization

Source: Wiley

Room-Temperature Ionic Liquids: A Review

Source: Wiley

How to Use Ionic Liquids in the Synthesis of Polymers: A Review

as important elements for sustainability evaluation




Source: Royal Society of Chemistry (RSC)

Nanostructured polyaniline decorated graphene sheets for reversible CO₂ capture

Source: Royal Society of Chemistry (RSC)

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Source: American Chemical Society (ACS)

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