



Q

Home ► All Journals ► Physical Sciences ► Separation Science and Technology ► List of Issues ► Volume 40, Issue 1-3 ► Examination of the Potential of Ionic Li

Separation Science and Technology > Volume 40, 2005 - <u>Issue 1-3</u>

8822156ViewsCrossRef citations to dateAltmetric

Articles

Examination of the Potential of Ionic Liquids for Gas Separations

Ruth E. Baltus 🔄, Robert M. Counce, Benjamin H. Culbertson, Huimin Luo,

David W. DePaoli, Sheng Dai & ... show all

Pages 525-541 | Published online: 09 Nov 2011

Cite this article https://doi.org/10.1081/SS-200042513



Abstract:

lonic 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 potential of ionic liquids for gas separations, including the removal of carbon dioxide from stack gas generated in coal-fired power plants. In this paper, we report results from measurements of the permeance of nitrogen and carbon dioxide in supported ionic liquid membranes. Preliminary results for a porous alumina membrane saturated with I-butyI-3-methyl imidazolium bis[trinuoromethylsulfonyl] amide yielded a CO₂ : N₂ selectivity of 127. Using previously reported measurements of CO₂ solubility in ionic liquids (1) and the measured membrane transport characteristics, a preliminary economic analysis of a separation process based on supported ionic liquid membranes has been performed. A comparison of cost estimates for this membrane-based separation to cost estimates reported for carbon dioxide removal using a conventional amine scrubbing operation shows that, with continued technology development, an

ionic liquid membrane process may potentially be economically competitive with amine scrubbing. A preliminary cost estimate for an ionic liquid scrubber indicates that an 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 1

People also read

Recommended articles

Cited by 215

Information for	Open access
Authors	Overview
R&D professionals	Open journals
Editors	Open Select
Librarians	Dove Medical Press
Societies	F1000Research
Opportunities	Help and information
Reprints and e-prints	Help and contact
Advertising solutions	Newsroom
Accelerated publication	All journals
Corporate access solutions	Books

Keep up to date

Register to receive personalised research and resources by email





Copyright © 2025 Informa UK Limited Privacy policy Cookies Terms & conditions

Taylor & Francis Group an informa business



Registered in England & Wales No. 01072954 5 Howick Place | London | SW1P 1WG