ROCO® NEWSLETTER

AWARDS AND PROJECTS

SBIR Awards:

Department of Energy

RoCo Global wins DOE's Phase I SBIR to solve climate challenges.

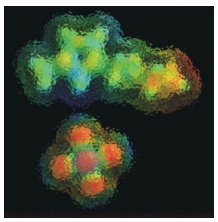
If successfully deployed, RoCo's water-lean solvent can potentially save $5.0/tonne of CO_2 captured according to a cost-benefit analysis.

See details on the next page

NASA

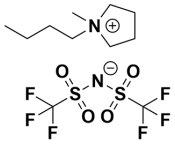
We are excited to be part of the NASA SBIR Phase I effort with our partners Faraday Technologies to extract oxygen, and materials from the lunar regolith for the Artemis project.

SPOTLIGHT ON IONIC LIQUIDS

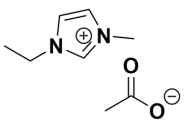


At RoCo Global, we understand ionic liquids and how the chemical structure dictates the underlying properties. Our years of experience in elucidating the properties can help you in your developmental efforts.

Our Top 3 Bestselling Ionic Liquids for 2022



1-Butyl-1-methylpyrrolidinium bis (trifluoromethylsulfonyl)imide (IL-0035-HP)(BMPYRR TFSI) used in super capacitors; Li-ion batteries; sodium batteries



1-Ethyl-3-methylimidazolium acetate (IL-0189-TG)(EMIM ACE) used as a green solvent, water dehydration applications, and zinc air batteries.

1-Butyl-3-methylimidazolium tetrafluoroborate (IL-0012-HP)(BMIM BF4) used as a green solvent, water dehydration applications, and zinc air batteries.

Quantification of Ancillary Environmental Benefits of Transformational Water-lean Solvent Technology

For conventional carbon capture applications, hazardous pollutants such as sulfur dioxide (SO_2) and nitrogen oxide (NO_x) need to be removed prior to capturing CO_2. The cost of implementing emission control technologies for SO_2 and NO_x is substantial and can be even more concerning for applications that require high removal efficiency. This ultimately leads to a significant impact on the overall economics of the carbon capture processes. One potential solution is to demonstrate transformational carbon capture technologies with significant ancillary environmental benefits. However, very little effort has been focused on the understanding and quantification of the co-benefit pollutant reductions.

RoCo Global (Liquid Ion Solutions, LLC) has developed transformational, high-performance, water-lean solvents based on its hydrogen bonding disrupting additives. Our preliminary results are highly encouraging. We have identified promising solvent systems with CO_2 capture capacity over 10 wt% and viscosity below 10 cP at 40 °C. A few solvent candidates have been tested at lab-scale under simulated flue gas containing 4% (NGCC) or 15% CO_2 (PC), capable of reaching > 95% capture efficiency. Under this project, the RoCo team aims to understand and quantify the co-benefit pollutant (NO_x and SO_x) reductions and evaluate their impact on the water-lean solvents. The study will provide crucial information for practical process design and more accurate economic analysis that are the foundation for the development, scale-up, and commercialization of RoCo's solvent technology.

RoCo's goal is to scale up and ultimately implement the technology at a commercial scale for large point source capture sites such as powerplants, metals industry, cement industry, etc. If successfully deployed, RoCo's water-lean solvent can potentially save $5.0/tonne CO_2 captured according to a cost benefit analysis. The proposed work is essential and would help to determine whether separate emission control units are needed upon implementing the technology, which may lead to an additional cost saving of $600/kW in capital cost and almost $7/kW-yr in operating cost.

For More Information

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