TRAPPING CARBON EMISSIONS

Hydrocarbons will continue to serve as an essential energy source while the world transitions to a lower-carbon energy economy, and we need to prevent the use of those fuels from contributing to the accumulation of \( \text{CO}_2 \) in the atmosphere. Existing technologies can capture carbon, but these methods can be costly and energy-intensive. Extracting energy without burning fuels, improving \( \text{CO}_2 \) capture efficiencies, and finding effective ways to store or reuse captured carbon may be essential to ensuring it does not enter the atmosphere.

CURRENT RESEARCH PROJECTS

- **Advanced Electrochemical System for Energy Storage Through \( \text{CO}_2 \) Conversion**
  Principal Investigators: Viola Birss & Jingli Luo*

- **Advancing Containment, Conformance and Injectivity Technologies for Effective Geological Storage of \( \text{CO}_2 \)**
  Principal Investigator: Rick Chalaturnyk

- **\( \text{CO}_2 \) adsorption mechanism of potassium promoted hydrotalcite and its application in high purity hydrogen production**
  Principal Investigator: Hao Zhang

- **\( \text{CO}_2 \) Dissolution in Saline Pore Fluids and \( \text{CO}_2 \) EOR**
  Principal Investigator: Amy Tsai

- **Exploring Wellbore and Reservoir Processes for Geological Storage of \( \text{CO}_2 \)**
  Principal Investigator: Rick Chalaturnyk

- **Integrated Carbon Capture and [Photo] Reduction Systems**
  Principal Investigator: Al Meldrum

- **Kinetics of \( \text{CO}_2 \) hydrate formation**
  Principal Investigator: Nobuo Maeda

- **Mitigation of climate forcing materials Post Combustion**
  Principal Investigator: Larry Kostiuk

*In partnership with the University of Calgary

RECENT PUBLICATIONS

- **Capture of \( \text{CO}_2 \) using Solid Sorbents**
  Principal Investigator: Arvind Rajendran

- **Thermal Impacts for Geological Storage of \( \text{CO}_2 \)**
  Principal Investigators: Rick Chalaturnyk & Donald Lawton*

- **Transforming Fossil Fuels into Heat or Hydrogen**
  Principal Investigator: Jason Olfert

- **Value-Added Conversion of \( \text{CO}_2 \)**
  Principal Investigator: Jingli Luo

RECENT NEWS STORIES

- Newly developed screening processes will help accelerate carbon capture research
- Carbon capture and storage could still play a major role in mitigating emissions

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