UNIVERSITY OF ALBERTA – FUTURE ENERGY SYSTEMS

CARBON CAPTURE, UTILIZATION & STORAGE

$5.6M in research funding to 2023

12 active CCUS projects

18 Principal Investigators and Co-Investigators

42 students & post-doctoral fellows

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 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 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 CO_2 Conversion
Principal Investigators: Viola Birss & Jingli Luo*

Advancing Containment, Conformance and Injectivity Technologies for Effective Geological Storage of CO_2
Principal Investigator: Rick Chalaturnyk

CO_2 adsorption mechanism of potassium promoted hydrotalcite and its application in high purity hydrogen production
Principal Investigator: Hao Zhang

CO_2 Dissolution in Saline Pore Fluids and CO_2 EOR
Principal Investigator: Amy Tsai

Exploring Wellbore and Reservoir Processes for Geological Storage of CO_2
Principal Investigator: Rick Chalaturnyk

Integrated Carbon Capture and (Photo) Reduction Systems
Principal Investigator: Al Meldrum

Kinetics of CO_2 hydrate formation
Principal Investigator: Nobuo Maeda

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

Capture of CO_2 using Solid Sorbents
Principal Investigator: Arvind Rajendran

Thermal Impacts for Geological Storage of CO_2
Principal Investigators: Rick Chalaturnyk & Donald Lawton*

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

Value-Added Conversion of CO_2
Principal Investigator: Jingli Luo

In partnership with the University of Calgary

RECENT PUBLICATIONS

Machine learning-based multi-objective optimization of pressure-swing adsorption
Lead Author: Sai Gokul Subraveti

Non-Isothermal Injectivity Considerations for Effective Geological Storage of CO_2 at the Aquistore Site, Saskatchewan, Canada
Lead Author: Alireza Rangriz Shokri

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

For the latest information:
futureenergysystems.ca/ccus

V. 2021.02.08