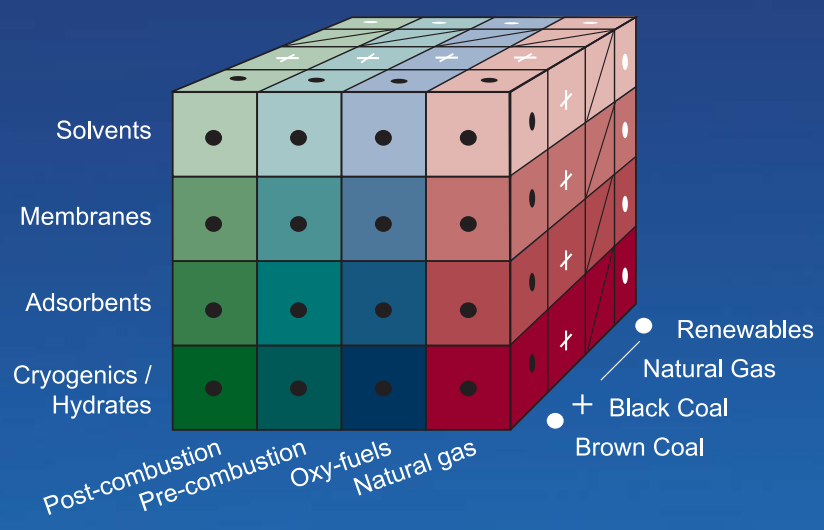
CO2CRC capture research

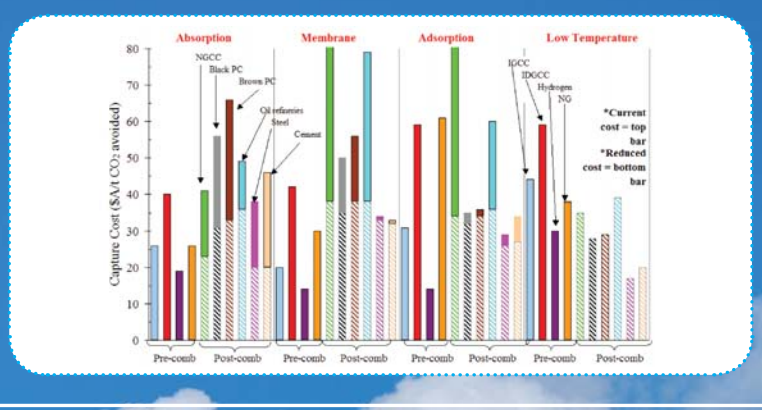
CO2CRC Capture research aims to research and develop technologies that can achieve significant cuts in carbon capture cost.

- A variety of separation materials and processes
- Different fuels
- A range of power generation applications
- Demonstration projects
- Comparative economics



Economics

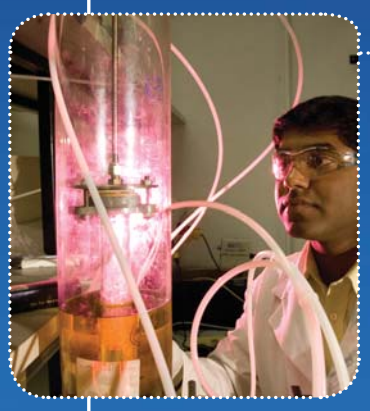
- Overall capture and storage (CCS) economics
- Source sink matching, transportation, injection and hub economics
- Separation and application sensitivities (see graph below)
- Current expected increase in power generation cost of CCS is $35-45 MWh (conditions apply)
- Aim to reduce cost of CCS to $15-20 MWh



Separation materials & process

Solvents: Investigating environmentally-friendly and cost effective solvents

- Potassium carbonate solvents with enhanced CO_2 absorption
- Potassium carbonate as a high temperature solvent
- Investigating the effect of impurities on absorption
- Column packing to improve absorption
- Adaption of membrane/solvent systems to absorption and desorption processes



Adsorbents: Development of new materials and testing of new processes for CO_2 adsorption

- Water-tolerant commercially available adsorbents (zeolites)
- Metal-organic frameworks with increased CO_2 adsorbent capacity
- Adding chemical structures to the pores of sorbent materials to increase adsorption
- Pilot adsorption system to release CO_2 from adsorbents by creating a near-vacuum.
- High temperature adsorbents
- Testing CO_2 release from adsorbents by low electrical voltage

Membranes: Testing commercially viable membranes and developing new membranes

- New polymer membranes with increased gas separation capacity and selectivity
- Carbon nanoporous membranes
- Double layer hydroxide membranes
- Superhydrophic membranes for gas absorption membrane operation
- Optimisation of membrane module design

Cryogenics/Hydrates: Testing cryogenic processes and developing hydrate processes

- New hydrate processes for integrated gasification combined cycle

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