

## CO<sub>2</sub> Capture Using Membranes

UNESCO Centre for Membrane Science & Technology at UNSW has a long history of developing high performance membranes for CO<sub>2</sub> capture from a range of greenhouse gas emission sources, with expertises expanding from fundamental membrane material development, to module and process design, and to pilot-scale onsite demonstration.



## More information

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# CO<sub>2</sub> Capture Using Membrane

UNESCO Centre for Membrane Science & Technology,  
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## Competitive advantage

- Membrane gas separation technology offers great advantages of small footprint, no chemical discharge, modulated design, and easy retrofitting;
- High performance membranes tailor-made for CO<sub>2</sub> capture in our centre achieved performances that could substantially reduce the cost of greenhouse gas abatement;
- Potential applications include CO<sub>2</sub> capture from concentrated emission sources such as cement production, biogas upgrading and natural gas sweetening, etc.

## Recent research projects

- Evaluation of CO<sub>2</sub> capture with high performance hollow fibre membranes from flue gas - funded by the Australian Government through its CRC program and through Australian National Low Emissions Coal Research and Development (2011-2014);
- Evaluation of sustainable performance of next generation membranes for flue gas carbon capture at Vales Point - funded by the Department of Planning and Environment through Coal Innovation NSW (2017-2019);
- Evaluation of membrane performance for CO<sub>2</sub> separation from high pressure natural gas well at Otway - funded by the Australian Government through its CRC program (2015-2019).

## Successful applications

- Our next generation CO<sub>2</sub>-philic membranes demonstrated sustainable high performance for flue gas carbon capture at a local coal-fired power station under industrially relevant conditions, among the best in the world;
- Our mechanically reinforced high pressure membranes demonstrated exceptional CO<sub>2</sub> removal performance at a local natural gas well under harsh industrial conditions with pressures above 20 bars over an extended operational period.

## Facilities and infrastructure

- UNESCO Centre for Membrane Science and Technology at UNSW is one of the world leading research centres in membrane R&D;
- Extensive research experience in developing high performance membranes for CO<sub>2</sub> capture as well as other gas separation applications;
- Among the best in the world in lab facilities for membrane material and membrane process development from lab- to pilot-scale.

## Our experts

- **Dr. Guangxi Dong**, Head of Membranes, Materials & Manufacturing Development (M<sup>3</sup>DU), CTET

