

CCS is one of the climate technologies needed for the EU to contribute to the implementation of the Paris Agreement. The IPCC have concluded that it will be almost impossible to remain within the 2°C limit without CCS and that attempting to do so could increase the cost of tackling climate change by 138%. An independent report 'A Roadmap for Carbon Capture and Storage' commissioned by government, industry and research organisations laid down a comprehensive plan for carbon capture and storage (CCS) deployment in Australia. Shell upstream director Andy Brown indicated that the oil and gas industry needs to stimulate regulation that will encourage more CCS, which would be an essential component of managing emissions post-2040.

Europe

[Adoption of ETS Report is Crucial for CCS](#)

2017/02/20

The European Zero Emissions Technology & Innovation Platform (ZEP) believes that an ambitious ETS reform is indispensable for both EU climate policy and the continued support for Carbon Capture and Storage (CCS) in Europe. The European Parliament has adopted its position on the EU Emissions Trading System (ETS).

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[Statoil is Phasing out the Combined Heat and Power Plant at Mongstad](#)

2017/02/16

The combined heat and power plant (CHP) at Mongstad is decided phased out following several years of unprofitable operations. The other operations at the complex will continue as before.

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North America

[CO₂ Solutions Receives Order for Enzymes](#)

2017/02/20

The order is for carbonic anhydrase enzyme for the use in CO₂ capture for enhancing the growth of algae for economical, sustainable production of protein and biofuel products. The purchase order is for the sale of US \$37,500 of enzyme to be delivered immediately. The name of the company purchasing the enzyme is not disclosed for competitive reasons. This sale of carbonic anhydrase enzyme (CA) to this leading provider of innovative technology is a trial to quantify the benefits of using CA to enhance the production of algae.

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[Novel Carbon Capture Project in Lake Charles Takes a Major Step Forward](#)

2017/02/16

Louisiana has moved closer to becoming the site of what will be the world's largest manufacturing carbon capture facility. The U.S. Energy Department in December announced it was conditionally guaranteeing up to \$2 billion in federal loans to Lake Charles Methanol. The deal, which remains subject to terms, will allow for lower borrowing costs for the plant under the advanced energy program. The company still must raise \$1.8 billion in equity.

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Rest of the World

[South Australian Blackouts Demonstrate Need to Explore Alternative Energy Options](#)

2017/02/17

With questions surrounding the reliability of the energy sector being posed following recent blackouts in South Australia and high temperatures in New South Wales, CEO for not for profit research group CO₂CRC, Tania Constable has stated that power shortages demonstrate a need to explore alternative options, and not just renewables, to provide clean and affordable energy in Australia.

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[New Report Backs Carbon Capture and Storage in Australia](#)

2017/02/16

An independent report commissioned by government, industry and research organisations has laid down a comprehensive plan for carbon capture and storage (CCS) deployment in Australia. The report 'A Roadmap for Carbon Capture and Storage' was led by Professor Chris Greig of the University of Queensland and involved a steering committee comprising the Commonwealth Government, NSW Government, CSIRO, CO₂CRC Limited, ACALET (COAL21 Fund) and ANLEC R&D.

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Global

[Shell Says Industry Needs to Push for CCS, CO₂ Tax](#)

2017/02/21

The oil and gas industry needs to be fit for the future, with self-help a key factor, Shell upstream director Andy Brown told the opening session of the IP Week February 21. US shale basins now "mostly work" at \$40/barrel of oil equivalent (boe) or less, but so too do the vast majority of deepwater fields in Shell's portfolio. For the latter, deepwater was typically breakeven at \$70/boe.

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Reviews of Research Papers and Reports

[Study on Properties of Mesoporous SiO₂/polyethylene Polyamine Composite Solid Adsorbent for CO₂ Capture](#)

Fengjing Jiang, Qingchun Yu 2016/12

Based on the fact that the conventional liquid adsorbents for CO₂ capture are usually energy-consuming and highly volatile, the solid-state adsorbent was developed by mixing the mesoporous SiO₂ with polyethylene polyamine, where mesoporous SiO₂ was prepared by using phosphoric acid as pore-forming agent and the average pore size of the SiO₂ can be well controlled in the range of 2-6 nm. Due to the huge specific area of the solid-state adsorbent, high CO₂-absorbing efficiency was achieved. The effect of adsorbent composition on adsorption efficiency was studied. And the impacts of temperature on CO₂ adsorption and regeneration as well as its evolution with time were also investigated. The results show that CO₂ can be completely adsorbed. When the mass ratio of polyethylene polyamine to SiO₂ is 20% and the temperature is 60°C, the adsorbent shows the best CO₂ adsorption ability.

[Study on CO₂ Adsorption with Activated Carbon Alkaline Cleaned and Modified under Ultrasonic Condition](#)

Fubao Zheng, Rongying Lin, Pan Yang 2016/12

In this experiment, coconut shell activated carbon particles were used as the carriers, the activated carbon particles alkaline cleaned and modified under ultrasonic condition were used for the adsorption of CO₂ gas. This paper focuses on the influences of alkaline agent concentration and ultrasonic time in the process of alkaline cleaning of activated carbon, and the influences of the stirring time, ultrasonic time and modifying agents in the process of modification of activated carbon. The alkaline cleaned and modified activated carbon particles were characterized by TGA and ASAP2020. The results show that the adsorption capacity of CO₂ gas of the modified activated carbon particles was 1.5 mmol·g⁻¹ when the alkaline cleaning conditions were KOH solution of 5 mol·L⁻¹ and ultrasonic time of 120 min, and the modified conditions were stirring time of 30 min, ultrasonic time of 100 min, and 10% (mass fraction) potassium carbonate as modifier. Research shows that ultrasound could promote the dispersion effect of alkaline agent on activated carbon pore, so that the pore cleaning effect on activated carbon would be enhanced. Besides, modifiers were distributed in pores very well by ultrasound, thus the adsorption performance of modified activated carbon particles for CO₂ gas could be improved. However, when ultrasonic time was too long in the

process of modification, the pore would be collapsed and broken into small particles, and then the adsorption property declined.

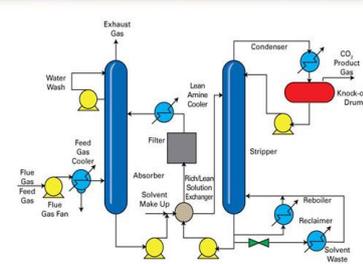
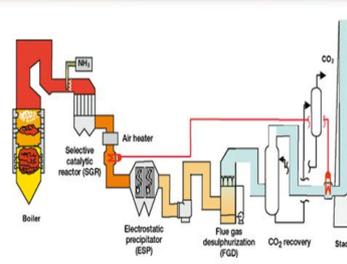
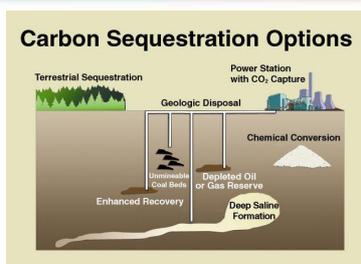
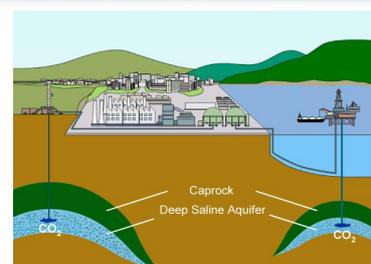
Reservoir Parameter Inversion of CO₂ Geological Sequestration Based on the Self-adaptive Hybrid Genetic Algorithm

Yanjun Hao, Dinghun Yang, Yuanfeng Cheng 2016/12

Carbon dioxide geological sequestration is an important approach to reduce carbon emission and to mitigate global warming. An important part of CO₂ sequestration is seismic monitoring, which is to monitor carbon dioxide distribution variation using the seismic method after sequestration. To achieve this goal, we need to establish the relationship between reservoir fluid saturation through inversion of seismic monitoring data. First, based on the Biot model and multiphase model, we investigate the effects if several physical parameters (porosity, CO₂ saturation, temperature and pressure, et al.) on seismic properties such as wave velocity and attenuation of carbon dioxide and water saturated porous media to obtain the regular understanding. The results show that porosity and CO₂ saturation have a huge impact on the properties of wave dispersion and attenuation, and temperature and pressure can affect the rock velocity through the properties of porous fluids. Next, based on Biot theory with multiphase flow, we apply the self-adaptive hybrid genetic algorithm, which has stronger anti-interference capacity and better ability of local search and anti-interference, to perform inversion of actual data. The inversion of core experimental data indicates the validity of the algorithm, and shows that Biot theory with multiphase flow can explain the wave velocity characters of CO₂ and water saturated rock. At last, we apply the self-adaptive hybrid genetic algorithm to the seismic monitoring data of actual sequestration project, and obtain the CO₂ saturation distribution at different periods after sequestration and achieve the purpose of using the seismic method to monitor carbon dioxide distribution.

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CCS Images Gallery - **New!**



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Upcoming Events

[All Energy 2017](#)

Time: 2017/5/10 to 2017/5/11

Location: Glasgow, UK

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Best wishes!

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