



Centre for Innovation in Carbon Capture and Storage (CICCS)

Inspiring Innovation...for a Cleaner Future

Welcome to the Centre for Innovation in Carbon Capture and Storage

Our bi-annual newsletter keeping you up to date with our activities

Since our official launch in 2008 CICCS has made significant progress in our research, teaching and outreach programmes; including new appointments, one farewell; as well as receiving some great accolades: winning prizes and gaining international recognition via our involvement in expert missions to Japan, New Zealand and Australia.

The Centre for Innovation in Carbon Capture and Storage (CICCS) at the University of Nottingham; funded by EPSRC; is an international, interdisciplinary leading centre for research at the interface between science and engineering; inspiring and delivering innovation and technological advances required for the wider deployment of Carbon Capture and Storage (CCS).

Please read on for further details on our latest advancements.

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Prof. Mercedes Maroto-Valer
Director of CICCS

CICCS Projects

CICCS continues to work to deliver CCS solutions for a cleaner future through the development of novel cross-disciplinary research programmes; uniting engineers, mathematicians, bio-scientists, geologists and geographers; and by encouraging international collaboration between industry, government departments, research centres and academia.

Current research spans a wide range of CCS topics, PhD projects include:

Susana Garcia - Carbon sequestration in sediments containing ferric iron.

Anna Kaminska - Maximisation of reaction rates of magnesium & calcium silicate mixtures during underground mineral carbonation.

Dong Lui – Double metal doping on TiO₂ for carbon dioxide photo catalytic reduction.

Qi Lui – Brine-rock interaction kinetics for geological CO₂ storage.

Mark Mitchell - Mathematical modelling of carbon capture and storage.

Xiaolong Wang - Ex-situ mineral carbonation with regenerative ammonium salts.

Yang Wei - Environmental consequences of potential leakage from novel CO₂ mineral traps.

In October 2008, we also launched the Technology Strategy Board (TSB) project - CO₂ Optimised Compression ("COZOC"), in partnership with Rolls-Royce plc and E.ON. Watch this space for updates on more upcoming projects.



Collaboration Opportunities

We would like to inform you of upcoming opportunities. Please give us a call if you are interested in participating in any of them.

Technology Strategy Board, Carbon Abatement Technologies, June 2009 Competition. Expression of interest deadline is the 23rd July 2009. We would like to continue our success in developing successful partnerships for this programme, and are currently looking for future partners. For further details see - <http://www.innovateuk.org>

EPSRC Industrial CASE Competition 2009, Closing Date 7th May 2009. This programme provides funding for PhD studentships where businesses take the lead in arranging projects with an academic partner. Studentships (current value per student of £65,294) will be awarded to companies with the EPSRC funding provided to the host University through Industrial CASE accounts. For further information see - <http://www.epsrc.ac.uk/PostgraduateTraining/IndustrialCASE/>

New appointments at CICCS

CICCS now has two members of staff dedicated to its future development and research:

Dr Steve Bouzalakos joined us as a Research Fellow in March 2008 after completing his PhD at Imperial College. Steve is a Civil/Environmental Engineer by training and an active researcher in geological storage and mineral carbonation processes for CO₂ sequestration. Since joining the Centre he has been involved in a number of international activities, including an Energy Mission in early February 2009 to promote links between British and New Zealand research and technology institutions. Please see page 3 for further details.

Farewell Susana

Susana Garcia has been a very valuable member of CICCS, whose dedication and commitment during her PhD research has inspired continued growth of the Centre. Her project has opened a new line of research in carbon sequestration; establishing international co-operations. Susana was also instrumental in setting up our facilities for co-injection of gases during sequestration - a unique facility!

We regret CICCS had to say farewell to Susana at the end of February. Rather than being concerned with personal leaving preparations, Susana worked tirelessly to ensure laboratories were organised.

We congratulate Susana on her new position at the Instituto Nacional del Carbón (INCAR); and look forward to continued work with her in her new position.

Good luck Susana. Keep in touch.

Postgraduate collaborative training, Autumn 2009. CICCS is currently developing postgraduate training in Carbon Capture and Storage to start to fill the knowledge gap in this rapidly increasing topical field. The first short course will be organised for Autumn this year. Please keep an eye on our website for updates or drop us a line for further information. We would also welcome your involvement in the development of these training programmes, please get in touch if you can help.

CICCS Advisory Committee, Spring 2009. We are currently setting up the official CICCS Advisory Committee and would like to have broad industrial representation. The Advisory Committee will evaluate the performance of the Centre and advise on strategic direction. It will meet once a year, linked with our annual event, and all related expenses will be covered. Please let us know if you are interested in joining our committee.

Dr Ameena Camps joined us as a Research Fellow in January 2009, earlier this year. Prior to joining the Centre, Ameena worked as a Research Assistant at the University of Leicester; developing a multi-disciplinary knowledge transfer network. Ameena gained her PhD in 2007 after completion of a research project at the British Geological Survey and The University of Leicester; which received international press coverage due to its novel investigation of carbon dioxide storage as a liquid and hydrate. Since joining the Centre she has been developing outreach and promotional activities, as well as CCS training courses planned for Autumn this year.

We would like to welcome Steve and Ameena to CICCS, and we look forward to continuing our success with our expanding team.



Research group at CICCS

Meeting the Duke

The Centre for Innovation in Carbon Capture and Storage was specially selected to be one of three research teams representing the University of Nottingham at the Royal opening of the new University of Nottingham's Jubilee campus.

His Royal Highness the Duke of Gloucester officially opened the second phase of the Jubilee campus on the 11th of March 2009, and was intrigued by the Centre's research portfolio; which was presented by Prof. Mercedes Maroto-Valer, Dr Steve Bouzalakos, and Dr Ameena Camps. A CICCS pressure vessel, photoreduction rig, and a selection of our sample CO₂ trapping carbonate bricks were on display at the Royal event.

Many thanks to everyone who helped us to set up the display. Next time we'll remember our camera - so we have a picture without advertising Creative Energy Homes!



Photo, from right to left: HRH the Duke of Gloucester, Prof. Mercedes Maroto-Valer, Dr Ameena Camps, Dr Steve Bouzalakos.

International Energy Missions

UK CCS experts in Japan. Prof. Maroto-Valer participated in the mission of UK experts on CCS to Japan from 29th September to 3rd October 2008, with support from the Science and Innovation Section of the British Embassy Tokyo. A wide range of discussions were held with officials from government departments, and public sector organisations. A summary can be found in the Jan-Feb 2009 issue of the Carbon Capture Journal: www.carboncapturejournal.com

UK/New Zealand Renewable and Clean Energy Mission. Dr Steve Bouzalakos, Research Fellow, was one of only 11 UK delegates invited by the British High Commission in New Zealand to this mission in early February 2009. The mission;

sponsored by the UK Foreign and Commonwealth Office through its Strategic Programme fund, was to promote research links between British and New Zealand research and technology institutions. Opportunities were created to make contacts with organizations of interest, and Steve has since been in contact with GNS Science for potential future collaboration.

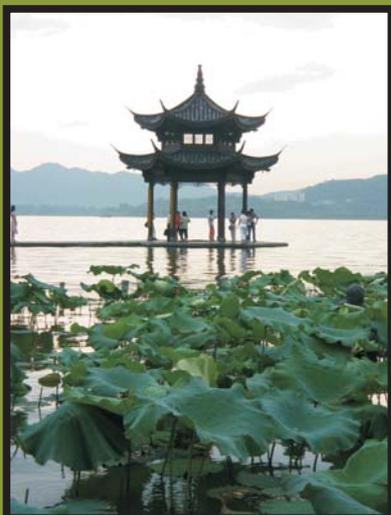
UK/Australia Clean Coal Technologies Networking Mission. Following on from the UK/NZ mission, Steve was personally invited by the British High Commission in Australia to attend a UK/Australia Clean Coal Technologies Networking Mission in mid-March 2009; funded by the UK Foreign and Commonwealth Office. This mission was a week-long event which included visits to research facilities, workshops, symposiums, and networking events with Australian Universities and businesses; with an aim of building joint partnerships.

Places won on the COACH Spring School in China

Three researchers from CICCS have won places to attend a Spring School in Hangzhou China organised by the COACH project. Ameena Camps, Steve Bouzalakos and Anna Kaminska will all be funded by the COACH project to spend 10 days at Zhejiang University studying aspects of CO₂ storage. Only 8 researchers were selected from the whole of Europe and 3 of them are from CICCS!

COACH is a Sino-European research project aimed at creating strong and durable co-operation between China and Europe. Responding to the fast growing energy demands of China, the project aims to prepare the ground for new energy technology options that employ CO₂ capture and permanent geological storage (CCS) - including the use of CO₂ for enhanced oil or gas recovery.

Our researchers will be leaving us for Hangzhou in April. Congratulations all three. Have a safe trip.





Photo, from left to right: Claudio Avila, Manuela Rallo, Susana Garcia and Anna Kaminska.

E.ON Award Top Prizes to Our Students

In May 2008 E.ON hosted a competition for students with innovative ideas and research into sustainable energy. The competition followed on from a programme of events, with students invited to a tour of Ratcliffe-on-Soar power station to learn about new technologies being developed for a greener future. The competition offered a £8000 prize fund, and three of our students were awarded top prizes:

Susana Garcia, received both 2nd prize and Peer Review Prize for her project "A novel concept: Storage of CO₂-SO₂ streams in geological formations"

Anna Kaminska received the Special Commendation prize for her project "Overcoming integrity barriers for wider deployment of CCS technologies".

Manuela Rallo received the Peer Review prize for "Study of trace metals by-products and their partitioning in power plants".

Well done Susana, Anna and Manuela!

Presentations

This has been a very busy year with many invited presentations to spread the word about CICCS; as well as organising events for SME's to discuss their carbon footprint and the role of CCS. International commitments have taken us to Washington, Philadelphia, Pittsburgh, Ankara, Madrid, Barcelona, Paris, Toulouse and Pisa. Phew...and the year just keeps getting busier!

Collaboration for a cleaner, low carbon future

CICCS will be hosting a delegation of key Chinese policy makers to encourage international collaboration for a cleaner, low carbon future. This influential delegation will be visiting the University of Nottingham on the 31st of March 2009 as part of NZEC's (the UK-China Near Zero Emissions Coal project) study tour.

Further information on CICCS news is available from: www.nottingham.ac.uk/ciccs/news

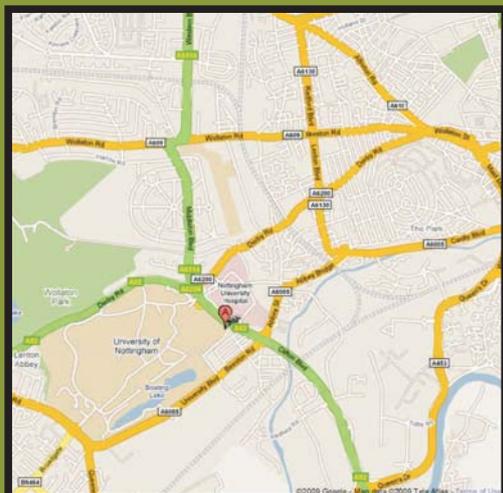
More News and Events

Director Invited to Speak at FT Conference

The director of CICCS, Prof. Mercedes Maroto-Valer was invited to speak at a prestigious Financial Times Energy Conference on the 3rd of February this year; which brought together international leading experts on technological solutions to the global energy challenge. Mercedes was chosen to speak on a panel of experts discussing the reduction of greenhouse gas emissions from hydrocarbon fuels.

Local Stardom

Professor Mercedes Maroto-Valer appeared in the local Nottingham Evening post, discussing the Centre and its role in cutting carbon emissions for a cleaner future. Further details can be found on our website.



CICCS is based at the University of Nottingham, University Park campus, Coates Building, just off the A52.

Contact Us

For general enquiries please email us on ciccs@nottingham.ac.uk.

Centre for Innovation in Carbon Capture and Storage
Faculty of Engineering
University of Nottingham
University Park
Nottingham NG7 2RD, UK

Tel: +44(0)115 951 4081
Fax: +44(0)115 951 4115

For further information about CICCS and our latest news and events please visit www.nottingham.ac.uk/ciccs