

CO₂QUEST

IoLiCAP

**INTERNATIONAL FORUM ON RECENT
DEVELOPMENTS OF CCS IMPLEMENTATION**

LEADING THE WAY TO A LOW-CARBON FUTURE

26TH - 27TH MARCH, 2015

ATHENS, GREECE



ATHENS LEDRA HOTEL

AGENDA



WEDNESDAY, 25 MARCH, 2015

Arrival to Athens and check-in at the **Athens Ledra Hotel**.

FOR YOUR EVENING, WE PROPOSE...

A walk in Plaka, the old historical neighborhood of Athens, on the footsteps of the Acropolis. With its labyrinthine streets and neoclassical architecture, Plaka has been known as the "Neighborhood of the Gods". Your walk can end in one of the numerous restaurants, tavernas or coffee shops in the area.

Plaka is only 10' away from your hotel, by taxi. The taxi will cost approximately 4,00€ -5,00€.

SOME SUGGESTIONS FOR DINING IN THE AREA:

- ✓ Melina
<http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/melina/?l=en>
- ✓ Psaras
http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/palia_taverna_toy_psara/
- ✓ Scholarhio
<http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/sxolarxio/>
- ✓ 2Mazi
<http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/mazi/>

ALTERNATIVELY

A visit to Kolonaki, Athens' high-end district, right in the heart of the city. Kolonaki is a leading shopping area and has a number of museums and galleries (e.g. the Benaki Museum, the Museum of Cycladic Arts, the Byzantine Museum, the National Gallery). A plethora of nightlife options, bars, restaurants, cafes, can be your choice after finishing your walk.

From Kolonaki you can also take the Lycabettus Funicular to reach the Lycabettus Hill pick and enjoy fantastic panoramic views of Athens.

Kolonaki is about 15' away from your hotel, by taxi. The taxi will cost approximately 5,00€ -7,00€.

SOME SUGGESTIONS FOR DINING IN THE AREA:

- ✓ Rock & Roll
<http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/rocknroll/>
- ✓ Oikeio
<http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/oikeio/>
- ✓ Para Siempre
http://www.bestofrestaurants.gr/attiki/athina/sites/restaurants/para_siempre/

THURSDAY, 26 MARCH, 2015

08:30	Registration / Welcome coffee	Pre-function area
09:00	Opening: Welcome and Introduction Dr. Robert M. Woolley (University of Leeds, UK)	Aegina/Hydra/Spetses meeting room
09:05	Opening Remarks: CO2QUEST P.I. Prof. Haroun Mahgerefteh (UCL, UK)	
09:10	Plenary Lecture 1: Update from the European Commission Initiatives on CCS from the Research and Innovation Perspective Dr. Vassilios Kougionas (DG Research & Innovation, EC) Chair: Prof. Haroun Mahgerefteh (UCL, UK)	
Session 1: Transport and Safety 1 Chair: Prof. Haroun Mahgerefteh (UCL, UK)		
10:00	Numerical Modelling of Heat Transfer Phenomena in Accidental CO₂ Pipeline Release Scenarios Robert Woolley (University of Leeds, UK)	
10:20	Predicting the Atmospheric Dispersion of Carbon Dioxide Releases from Pipelines for CCS Applications using CO2FOAM Jennifer Wen (University of Warwick, UK)	
10:40	A Study of Transient Two-phase Flows in CO₂ Pipelines Solomon Brown (UCL, UK)	
11:00	Measurement of Water Solubility Limits in CO₂ Mixtures to Ensure the Safe Pipeline Transportation of CO₂ Stephanie Foltran (University of Nottingham, UK)	
11:20	COFFEE BREAK	Pre-function area
Session 2: Capture 1 Chair: Dr. George Romanos (NCSR, Greece)		Aegina/Hydra/Spetses meeting room
11:40	CO₂ Capture by Novel Supported Ionic Liquid Phase Materials Consisting of Silica Encapsulated Chitosan Ionogels Peter Schultz (University of Erlangen, Germany)	
12:00	Optimised PEI impregnation of Activated Carbons - Enhancement of Post-combustion CO₂ Capture Antonio Salituro (University of Leeds, UK)	
12:20	Molecular Simulation of Ionic Liquid Solvents for CO₂ Capture Niki Vergadou (NCSR, Greece)	
12:40	LUNCH	Zephyros Restaurant
13:30	Plenary Lecture 2: Comparative Costings for 1st, 2nd and 3rd Generation CCS technologies Dr. Paul Fennell (ICL, UK) Chair: Dr. Niall Mac Dowell (ICL, UK)	Aegina/Hydra/Spetses meeting room

Session 3: Process Optimisation and Techno-economic Considerations Chair: Dr. Niall Mac Dowell (ICL, UK)		Aegina/Hydra/Spetses meeting room
14:20	Computationally Efficient Surrogate Based Multi-objective Optimisation for Pressure Swing Adsorption for Carbon capture Eric Fraga (UCL, UK)	
14:40	IMPACTS: Economic Trade-offs in Establishing CO₂ Impurity Specifications Charles Eickhoff (Progressive Energy Ltd., UK)	
15:00	Techno-economic Analysis of Gas Purification for CO₂ Transport and Injection for Storage Clea Kolster (ICL, UK)	
15:20	CCS System Modelling: Enabling Technology to Help Accelerate Commercialisation and Reduce Technology Risk – A Case Study on the Operation of CCS Networks Mario Calado (PSE, UK)	
15:40	COFFEE BREAK	Pre-function area
Session 4: Thermophysical Properties Chair: Prof. Ioannis Economou (Texas A&M University, Qatar)		Aegina/Hydra/Spetses meeting room
16:00	Thermophysical Properties of Tricyanomethanide and Tetracyanoborate-Based Ionic Liquids by Using Dynamic Light Scattering and Conventional Methods Peter Schultz (University of Erlangen, Germany)	
16:20	Solubility and Kinetics of CO₂ in Low Transition Temperature Mixtures: Experiments and Modelling Lawien Zubeir (Eindhoven University of Technology, Netherlands)	
16:40	Measurements on Volumetric Properties of binaries and ternaries of Carbon dioxide, Nitrogen, and Argon at Supercritical State by Single Sinker Densimeter Xiaoxian Yang (Tsinghua University, China)	
17:00	Thermophysical Properties for Transport and Storage of CO₂-rich Mixtures – Contributions by IMPACTS Roland Span (Ruhr-Universität Bochum, Germany)	
17:20	Prediction of Physical Properties for CCS Process Design Using Molecular Simulation Ioannis Economou (Texas A&M University, Qatar)	
17:40	CO₂+SO₂ Co-capture Assessment. Part 1. Sofia Blanco (University of Zaragoza, Spain)	
18:00	Close: Notices	
COCKTAIL DINNER		
20:00 – 22:00: Cocktail dinner at the <i>Ledra Kai Restaurant</i> , located at the Ledra Hotel Athens.		

FRIDAY, 27 MARCH, 2015			
08:30	Registration / Welcome coffee	Pre-function area	
09:00	Opening: Welcome and Introduction by IoLiCAP P.I. Dr. George Romanos (NCSR, Greece)	Aegina/Hydra/Spetses meeting room	
09:10	Plenary Lecture 3: A Global Overview of CCS Implementation Mr. John Gale (IEA Greenhouse Gas R&D) Chair: Dr. George Romanos (NCSR, Greece)		
Session 5: Storage Chair: Dr. Dorothee Rebscher (BGR, Germany)			
10:00	A Geochemical Database for Subsurface Applications – Theory and Experiments Henning Peters (Shell Global Solutions, Netherlands)		
10:20	Potential Impact of Selected Impurities on Geochemistry Related to CO₂ Storage Dorothee Rebscher (BGR, Germany)		
10:40	The Plains CO₂ Reduction Partnership: Demonstrating Carbon Dioxide Storage in the United States and Canada Charles Gorecki (University of North Dakota, USA)		
11:00	Predicting the Long Term Fate of the Stored CO₂: Main Findings of the EU-FP7 Funded PANACEA Project Jacob Bensabat (EWRE, Israel)		
11:20	COFFEE BREAK		Pre-function area
Session 6: Transport and Safety 2 Chair: Prof. Roland Span (Ruhr-Universität Bochum, Germany)			
11:40	Numerical Modelling of Dynamic Brittle Crack Initiation and Propagation of Pipeline Steel Reza Talemi (OCAS, Belgium)		Aegina/Hydra/Spetses meeting room
12:00	CO₂ Compression and Flow in Transportation Networks Sergey Martynov (UCL, UK)		
12:20	Impact of Impurities on Pipeline Specification and Hydraulics Julia Race (University of Strathclyde, UK)		
12:40	Effect of Ionic Liquids with Imidazolium and Lactam-Based Cations on Corrosion of Mild Steel Igor Molchan (University of Manchester, UK)		
13:00	LUNCH	Zephyros Restaurant	
13:50	Plenary Lecture 4: Transferring CCS Research into Good Transportation Design Mr. Russell Cooper (National Grid, UK) Chair: Dr. Vassilios Kougionas (DG Research & Innovation, EC)	Aegina/Hydra/Spetses meeting room	

Session 7: Capture 2 Chair: Dr. George Romanos (NCSR, Greece)		Aegina/Hydra/Spetses meeting room
14:40	The Role of Degradation on Foaming of Various Amine Solvents in Model Columns Kyra Campbell (ICL, UK)	
15:00	Do Ether Functionalized Ionic Liquids Improve the CO₂ Solubility? Lawien Zubeir (Eindhoven University of Technology, Netherlands)	
15:20	Up-scaled Synthesis of TCM-based Ionic Liquids for CO₂ Capture Boyan Iliev (IOLITEC, Germany)	
15:40	On the Use of Ionic Liquids in Order to Inhibit/Promote CO₂ Hydrates George Romanos (NCSR, Greece)	
16:00	COFFEE BREAK	Pre-function area
Session 8: Combustion Chair: Prof. Jennifer Wen (University of Warwick, UK)		Aegina/Hydra/Spetses meeting room
16:20	Gas-CCS: Experimental Impact of CO₂ Enhanced Air on Combustion Characteristics and Microturbine Performance Thom Best (University of Leeds, UK)	
16:40	Pressurised Carbonation Experiments in the Presence of Steam in a Spouted-Bed Reactor Joseph Yao (ICL, UK)	
17:00	Investigating the Performance of Fe-based Oxygen Carriers for Pressurised Chemical-looping Combustion of Gaseous Fuels Zili Zhang (ICL, UK)	
17:20	Closing Remarks Mr. Peter Petrov, IoLiCAP Programme Officer (DG Research & Innovation, EC)	
17:30	Close: Thanks and end of conference by CO₂QUEST P.I. Prof. Haroun Mahgerefteh (UCL, UK)	



The following posters will be presented throughout the event:

POSTERS
<p>Investigation of the Effect of Elevation and Impurities on CO₂ Pipeline Repressurisation Distance Using Aspen Hysys 8.6V Process Simulator Victor Onyebuchi (Cranfield University, UK)</p>
<p>Feasibility Study of Microbial Associated CO₂ Geological Storage Atsuko Tanaka (AIST, Japan)</p>
<p>Technical Design of a CO₂ Transport System From Western Macedonia Power Stations to the Prinos Oil Field, Greece Alexandros Tasianas (NTUA, Greece)</p>
<p>Calculation of Gas Solubility in Selected Ionic Liquids and their Aqueous Solutions with ePC-SAFT Theodora Spyriouni (Scienomics, Greece)</p>
<p>Multi-Criteria Decision Support for Evaluating CCS Technologies Stefanie Niekamp (TWI Ltd., UK)</p>
<p>Effect of Cryogenic Air Separation Purity on Oxy-fuel Combustion for Carbon Capture Pedro Rivotti (ICL, UK)</p>
<p>A Model of the Near-field Expansion of CO₂ Jet Released from a Ruptured Pipeline Wentian Zheng (UCL, UK)</p>
<p>Compression Requirements for Post-combustion, Pre-Combustion and Oxy-fuel CO₂ Streams in CCS Nor Daud (UCL, UK)</p>
<p>Comparison of Numerical Predictions with CO₂ Pipeline Release Datasets of Relevance to CCS Applications Robert Woolley on behalf of Chris Wareing (University of Leeds, UK)</p>
<p>Industrial Scale CO₂ Release Experiment Facility Modelling CO₂ Pipeline Failure Richard Chen (DUT, China)</p>
<p>Synthesis of Selective CO₂ Sorbents for Post-combustion Capture: The Key Role of the Intrinsic Basicity Originated from Oak Wood Antonio Salituro (University of Leeds, UK)</p>
<p>Inside and Outside Flow from Pipes Containing a Dense CO₂ Mixture Incorporating Impurities: Experimental Set-up and First Results Jerome Hébrard (INERIS, France)</p>
<p>CO₂ and its Impurities Along the CCS chain : Overview of Possible Impacts and the Criteria for Risk Assessment Regis Farret (INERIS, France)</p>

FOR YOUR EVENING, WE PROPOSE...

Flisvos Marina for a nice walk by the sea. There are plenty of choices for dinner and drinks in the area.

Flisvos Marina is only 10' by taxi from your hotel, by taxi. The taxi will cost approximately 3,50€ -5,00€.

SOME SUGGESTIONS FOR DINING IN THE AREA:

- ✓ T.G.I. Fridays
- ✓ Mare Marina
- ✓ Breeze Pasta & Pizza

<http://www.flisvosmarina.com/en-us/commercial/-coffee/>

AFTER THE WORKSHOP...

Please contact FYE for any of the following proposals of your choice, at least a week prior to your arrival to Athens.

A guided tour of the city

A 4 hours guided tour that will take you back in the golden age of the 5th century B.C. and will walk you through the later Byzantium, Ottoman and modern eras of Athens. The tour includes some of the most important museums of the world, such as the Acropolis Museum and the Archeological Museum.

Rib adventure

An exciting Rib Safari to the Saronic Gulf, offering you the opportunity to visit 6 of the most well-known Greek islands (Aegina, Moni, Agkistri, Hydra, Spetses, Poros), taste excellent Greek cuisine and stay in selected accommodation.

Minimum participation 2 people

Sailing

An exciting activity and a unique opportunity to enjoy the famous Greek waters. Sailing through the Saronic Gulf will allow you to relax and let your spirit free, while you will be able to enjoy lunch in one of the nearby islands.

Minimum participation 15 people

CO₂QUEST

IoLiCAP

A weekend break on a Greek island

A one night's stay in famous Hydra, Spetses or Aegina islands. Your summer holidays can start from one of these famous islands, only within a maximum 2 hours distance from Athens.

Contact information:

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ABOUT ATHENS...

www.thisisathens.org

Surrounded by a lining of stunning seas and mountains, Athens is filled with gems just waiting to be discovered. The capital of Greece is located at the crossroad of three continents and has an overall population of close to four million. Athens features history, culture and welcoming - hospitable people who will make you feel at home.

Athens' mild weather conditions and its friendly transportation network will prompt you to visit world-class cultural attractions, numerous museums and archeological sites, while diverse entertainment choices and hundreds of restaurants are bound to satisfy every taste.

History unfolds with every step: from the Parthenon atop the Acropolis, to the Temple of Poseidon at Cape Sounion, on the tip of Attica. City highlights include: the Odeon of Herodes Atticus, Hadrian's Arch, The Temple of Olympian Zeus, The Ancient Agora, the Tomb of the Unknown Soldier and the Panathenaic Stadium. Don't miss the chance to visit the much acclaimed Acropolis Museum and the National Archaeological Museum. Athletic types put on you sneakers or trekking attire and head to the top of Lycabettus Hill for a spectacular view. Alternatively, enjoy a cocktail or a delicious meal at one of the city's many strikingly chic rooftop venues.

Due to its ideal location, Athens is only 2 hours away from one of Greece's finest ski resorts and only 2 hours away from some of the most picturesque and popular Greek islands.

FYE – For Your Event can organize your city tour or your weekend getaway based on your preferences.

