## Tuesday, 18th June

# PROGRAM 2019

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| 08:30 | Welcome Chaired By Nils A Røkke | | | | | **Venue** |
| 08:40 | Conference opening - Mr. Kjell-Børge Freiberg, Minister of petroleum and Energy, Norway | | | | | **F1** |
| 09:00 | Keynote 1: Dr. Myles Allen, Professor, Imperial College London, UK | | | | | **F1** |
| 09:20 | Keynote 2: Dr. Patrick Child, Deputy Director General, European Commission - DG RTD | | | | | **F1** |
| 09:40 | Keynote 3: Mr. Tim Dixon, Programme Manager, IEAGHG | | | | | **F1** |
| 10:00 | Coffee break | | | | | |
| 10:30 | Keynote 4: Dr. Trude Sundset, CEO, Gassnova, Norway | | | | | **F1** |
| 10:50 | Keynote 5: Dr. Stephen Bull, Position, Equinor, Norway | | | | | **F1** |
| 11:10 | Keynote 6: Mr. Oscar Graff , Director Carbon capture and storage, Aker Solutions | | | | | **F1** |
| 11:30 | Keynote 7: Dr. Mona J. Mølnvik, Research Director, SINTEF Energy Research, Norway | | | | | **F1** |
| 11:50 | Lunch | | | | | **Hangaren** |
| 13:00 | **A1. Absorption pilot operations and new constructions (Venue F1)** | **B1. Membranes (Venue EL2)** | **C1: CCS whole system issues** | **D1: International R&D activities** | **E1: Geomechanics and induced seismicity (Venue EL6)** | |
| 13:00 | A very compact $CO_2$ absorption-desorption plant (Prof. Dag Eimer) | Advanced membranes and membrane assisted processes for pre- and post- combustion $CO_2$ capture (Dr Jose Luis Viviente) | CCS: Mature technology and known costs – implement in large-scale now (Dr Torleif Holt, Dr Erik Lindeberg) | CCUS: HeidelbergCement's innovative approaches (Mr Jan Theulen) | Effect of $CO_2$ injection-induced stress rotation in overburden on the fault stability and induced seismicity: Numerical investigation (Dr Jung Chan Choi) | |
| 13:20 | Application of Sequential Design of Experiments (SDoE) to a Pilot-Scale MEA-Based $CO_2$ Capture Process (Dr. Joshua Morgan) | Physically cross-linked amino acid-based PVA/CNC membranes for enhanced $CO_2$ separation (Ms Jing Deng) | Toward improved guidelines for cost evaluation of $CO_2$ capture technologies (Mr Simon Roussanaly) | BASRECCS - a network of CCUS expertise in the Baltic Sea Region (Ms Ingvild Ombudstvedt) | Shear enhanced decompaction weakening and its effects on formation of seismic chimney (Dr Lawrence Hongliang Wang) | |
| 13.40 | Intensified Post Combustion, Solvent Based Carbon Capture in a Rotating Packed Bed Absorber and Rotating Regenerator and Reboiler (Dr. Jonathan Lee) | Advanced membrane technologies for $CO_2$ capture and utilization (Mr Howard Meyer) | Electrification of heat: prospects and challenges for the UK (Ms Pooya Hoseinpoori) | CHEERS project: development of a multi modal megawatt scale Chemical Looping Combustion (CLC) demonstration unit for CCUS (Dr Florent GUILLOU) | $CO_2$ leakage potential as a result of induced seismicity (Dr Victor Vilarrasa) | |
| 14:00 | **A2. Absorption pilots and demonstration (Venue F1)** | **B2. Calcium looping (Venue EL2)** | **C2: CCS whole system issues (Venue EL3)** | **D2: Hydrogen CCS chain (Venue EL5)** | **E2: Well integrity** | |
| 14:00 | Boundary Dam 3 - Review and Update (Mr Michael Monea) | Post-combustion $CO_2$ capture using Carbonate Looping and Catalytic Combustion (Prof kumar Rout9 | The Role of CCS in the UK: A Spatial Analysis (Ms Praveen Bains) | Accelerated decarbonization of Europe's energy system – how case studies are applied in the ELEGANCY project to secure adaption of improved technologies, knowledge and tools to national and regional business case opportunities for hydrogen - CCS chains (Dr Gunhild Reigstad) | Near well-bore sealing in the Bečej $CO_2$ reservoir: Field tests of a silicate based sealant. (Dr Bernd Wiese) | |
| 14:20 | 2nd Generation CCS – Feasibility of Implementing CCS on SaskPower's Shand Power Station (Mr Corwyn Bruce) | $CO_2$ capture from waste to energy plants: techno-economic assessment of novel integration concepts of calcium looping technology (Mr Martin Haaf) | BECCS as part of a future $CO_2$ neutral energy system - A case study from Aalborg, Denmark (Dr Stefania Osk Gardarsdottir) | Public Acceptance of $H_2$/CCS chains in Germany (Ms Sabrina Glanz) | Pore-scale investigation of caprock-cement integrity for $CO_2$ storage (Dr Amir Jahanbakhsh) | |
| 14:40 | Practical Techniques for Operating Carbon Capture Systems: Lessons Learned from Operating the TCM Amine Plant (Dr Leila Faramarzl) | The Influence of $SO_2$ & $H_2O$ at Concentrations Relevant for Heavy Fuel Oil-Fired Power Plants on $CO_2$ & $SO_2$ Capture by Calcium Looping (Ms Sally Homsy) | Northern Lights – "open source" access to transport and storage service (Dr Knut Bakke) | A systematic assessment of low-carbon hydrogen and CCS options for the decarbonisation of heat (Mr Nixon Sunny) | Open-hole outflow for $CO_2$ injection wells (Dr Filip Neele) | |
| 15:00 | Reducing $CO_2$ Capture Cost by 30% Using Advanced KM CDR Process (Mr. Takashi Kamijo) | Integration of a flexible calcium looping $CO_2$ capture system in a back-up power plant (Prof Carlos Abanades) | The robust value of carbon capture and sequestration in a deeply decarbonised electricity system (Mr Yoga Pratama) | Decarbonization of petrochemical industrial sites: evaluation of technology combinations for reaching 50% and 95% $CO_2$ emission reduction. (Dr Rajat Bhardwaj) | Dynamic simulation of $CO_2$ injection wells taking the near-well reservoir into account (Dr Svend Tollak Munkejord) | |
| 15:20 | Poster session with coffee (Venue Registration area)<br>An FT-NIR And Raman Spectroscopic Investigation of High Concentrated MEA Solvent Systems For $CO_2$ Absorption (Ms Wathsala Jinadasa) | | | | | |
| 16:00 | **A3. Absorption solvents (Venue F1)** | **B3. $CO_2$ utilization with permanent storage and industril applications (Venue EL2)** | **C3: CCS whole system issues (Venue EL3)** | **D3: Hydrogen production and use (Venue EL5)** | **E3: Geophysical monitoring methods (Venue EL6)** | |
| 16:00 | Post-combustion $CO_2$ capture via chemical absorption with amino acid salts solutions (Mr Antonio Conversano) | DMX Demonstration in Dunkirk: 3D Project granted by $H_2O_2$0: scope and objectives (Dr Maxime Lacroix) | Experience from Tomakomai CCS demonstration project (Mr Yoshihiro Sawada) | Delivering negative emissions from biomass derived hydrogen and CCS (Dr Di Zhang, Dr Mai Bui) | Utilizing compressive sensing techniques to reduce geophysical monitoring costs at $CO_2$ injection site (Dr Jim White) | |
| 16:20 | On the mass transfer of $CO_2$ in enzyme enhanced solvents - comparison with conventional solvent systems (Dr Arne Gladis) | Characterizing Multiphase Flow in Heterogenous Carbonates (Dr Sojwal Manoorkar) | Road transport decarbonization via reforming based hydrogen coupled with CCS – a Life Cycle Assessment (Mr Christian Bauer) | Values and limitations of hydrogen in decarbonising heat in the UK (Ms Pooya Hoseinpoori) | Joint inversion of synthetic monitoring data for a realistic model from CaMI Field Research Station (FRS), Canada (Dr Michael Jordan) | |
| 16:40 | Precipitating absorption systems using 2-amino-2-methyl-1-propanol (Ms Hanna Karlsson) | The CCUS knowledge sharing network – supporting implementation of CCUS in Europe (Dr Kristin Jordal) | Capacity investments in a CCS value chain with operational uncertainty (Mr Vegard Skonseng Bjerketvedt Bjerketvedt) | Hydrogen production using membrane-assisted auto-thermal reforming integrated with chemical looping air separation (Dr Mohammed Nazeer Khan) | Feasibility of marine CSEM for $CO_2$ storage monitoring: North Sea model building and resistivity time evolution imaging (Dr Joonsang Park) | |
| 17:00 | Piperazine and methyldiet-hanolamine interrelationships in $CO_2$ absorption by aqueous amine mixtures (Prof Renzo Di Felice) | | Planning $CO_2$ transport and storage infrastructure in the Netherlands offshore (Dr Ton Wildenborg) | Hydrogen production with integrated $CO_2$ capture (Dr Markus Lesemann) | Combining monitoring data and flow simulations for improved $CO_2$ storage security (Dr Francesca Watson) | |
| 18:30 | Concert in Nidarosdomen Cathedral | | | | | |



## Wednesday, 19th June

PROGRAM 2019

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| 08:30 | Opening address | | | | | **F1** |
| 08:40 | Keynote 8: Dr. Niall Mac Dowell, Research Leader, Imperial College London, UK | | | | | **F1** |
| 09:00 | Keynote 9: Dr. Andrea Gruber, Research Scientist, SINTEF Energy Research, Norway and Dr. James Dawson, Professor, NTNU, Norway | | | | | **F1** |
| 09:20 | Keynote 9: Dr. Katherine D Romanak, Research Scientist, University of Texas at Austin, USA | | | | | **F1** |
| 09:40 | SINTEF and NTNU CCS Award winner's lecture (to be announced) | | | | | **F1** |
| 10:20 | **A4: Materials development - Techno-economics (Venue F1)** | **B4: Membranes (Venue EL2)** | **C4: $CO_2$ utilization with permanent storage and industiral applications (Venue EL3)** | **D4: Public acceptance and communication (Venue EL5)** | | **E4: Storage site characterization (Venue EL6)** |
| 10:20 | $CO_2$ capture opportunities in the Norwegian silicon industry (Dr Anette Mathisen) | A Combined Computational and Experimental Approach to Ultra-High Permeability Mixed Matrix Membranes for Post-Combustion $CO_2$ Capture (Dr David Hopkinson) | $CO_2$ Sources, Transportation and Storage Possibilities in Serbian Oil and Gas Fields (Mr Slavko Nesic, Mr Dusan Karas) | 10:20 | An overview of risk perceptions and social acceptance of CCS: a missing piece of the puzzle (Dr Farid Karimi, Ms Ingvild Ombudstvedt) | In situ quantification of capillary pressure during spontaneous imbibition in carbon storage reservoirs (Dr Christopher Zahasky) |
| 10:40 | IEAGHG-IEA Technical study: Homogenized Cost review of $CO_2$ capture in the cement and iron and steel industries (Dr Mónica García) | Optimization of post-combustion carbon dioxide capture by use of a facilitated carrier membrane (Mrs Natsayi Chiwaye) | Modelling bio-electrochemical $CO_2$ reduction to methane (Dr Gamunu Samarakoon) | 10:30 | Millennials and CCS: Persuasive Messaging for CCS Engagement (Ms Torund Bryhn) | Perspectives of Offshore CCS from the northern Gulf of Mexico, USA (Dr Tip Meckel) |
| 11:00 | Techno-economic study of the CCMS technology for $CO_2$ capture from ferro-silicon production (Dr Heidi Nygård) | The challenges of using the resistance in series model when modelling membrane contactor using viscous solvents for $CO_2$ capture (Dr Luca Ansaloni) | Techno-economic evaluation of technologies for $CO_2$ capture in the cement industry (Dr Stefania Osk Gardarsdottir) | 10:40 | Is public debate around carbon capture and storage changing? Exploring statements and visual frames used in Dutch newspapers (Dr Emma ter Mors) | The SRMS: Solving the volumetric vs dynamic $CO_2$ storage capacity dilemma (Dr. Sylvain Thibeau) |
| 11:20 | Scenario for near-term implementation of partial capture from blast furnace gases in Swedish steel industry (Mr Maximilian Biermann) | Green Bio-based Membranes for $CO_2$ Separation with Tuneable Separation Properties (Mr Saravanan Janakiram) | Mineral Carbonation Processes for Recycled Concrete Aggregate (Mr Johannes Tiefenthaler) | **Panel discussion** | | Svelvik $CO_2$ Field Lab: A small-scale laboratory for development of equipment and $CO_2$ monitoring techniques (Cathrine Ringstad) |
| 12:40 | **A5: Absorption solvent degradation and corrosion (Venue F1)** | **B5: Adsorbents (Venue EL2)** | **C5: $CO_2$ transport (Venue EL3)** | **D5: Direct air capture** | | **E5: $CO_2$ injectivity and EOR (Venue EL6)** |
| 12:40 | De-oxygenation as counter-measure for the reduction of oxidative degradation of $CO_2$ capture solvents (Ms Roberta Figueiredo) | Adsorbent Screening for novel Swing Adsorption Reactor Cluster (SARC) in Post Combustion $CO_2$ Capture (Mr Chaitanya Dhoke) | Identifying optimal conditions for transport of $CO_2$ by ship (Mr Simon Roussanaly) | Biogas reforming with CCS and DACCS: A Life Cycle Assessment of Carbon Dioxide Removal from the atmosphere (Mrs Karin Treyer) | | Permeability reduction by salt precipitation during $CO_2$-injection (Dr Aruoture Omekeh) |
| 13:00 | Degradation Potential of Aqueous and Water-Lean MEA (Ms Karen Karolina Høisæter) | Evaluation of MOFs for post-combustion $CO_2$ capture (Dr David Danaci) | Implementation of a Gibbs Energy Explicit Seawater Equation in Helmholtz Mixture Models to Represent the Interaction of Brines with CCS-Relevant Fluids (Mr Benedikt Semrau) | The cost of delaying or missing CCS and BECCS deployment ambitions to the benefit of Direct Air Capture (Dr Ozgu Turgut) | | Mobility control of $CO_2$ during aquifer storage (Dr Albert Barrabino) |
| 13:20 | Investigation of Corrosion-Related Failure of Reboiler at Technology Centre Mongstad (Dr Attila Palencsar) | Development of 3D printed amine grafted silica adsorbents for $CO_2$ capture – adsorbent preparation, performance and potential applications (Dr Richard Blom) | Fracture propagation control in $CO_2$ pipelines: Sensitivity of a coupled FE-CFD model to fluid equation of state (Dr Stéphane Dumoulin) | The world's first carbon dioxide removal plant enabled by direct air capture (Dr Daniel Sutter) | | Understanding Reactive Flow in Porous Media for $CO_2$ Storage Applications (Mrs Shima Ghanaatian) |
| 13:40 | Corrosivity of degraded mea solvent and fresh solvent added organic acids and salts (Dr Kjell-Arne Solli) | A Heat Integrated Solid-sorbent Based Fluidized Bed Process for Post-Combustion $CO_2$ Capture (Dr Yong-Ki Park) | Combining $CO_2$ streams from different emitters – a challenge for pipeline transportation (Dr Heike Ruetters) | Evaluation of a Direct Air Capture Process Combining Wet Scrubbing and Bipolar Membrane Electrodialysis (Mr Francesco Sabatino) | | Fluid Distribution in Immiscible Two-Phase Fluid Displacement for $CO_2$ Storage (Ms Rumbidzai Nhunduru) |
| 14:20 | **A6: Pre-combustion capture absorption, adsorption and membranes (Venue F1)** | **B6: Calcium and chemical looping (Venue EL2)** | **C6: $CO_2$ Transport - experiments and modeling (Venue EL3)** | **D6: CCS future (Venue EL5)** | | **E6: $CO_2$ Storage miscellaneous (Venue EL6)** |
| 14:20 | Development of silica sodalite with enhanced porosity via topotactic synthesis approach for pre-combustion $CO_2$ capture (Ms Christin Eden) | CLEANKER – Clean clinker by Calcium Looping process for low-$CO_2$ cement production – Overview and current stage (Dr Fantini Martina, Prof Matteo Carmelo Romano) | Vessel depressurization of $CO_2$-rich streams – from experiments to simulations (Mr Guillaume vaillant) | Review of current and emerging $CO_2$ capture technologies (Dr Mónica García) | | Effect of Geochemical Integrity of Binding Cement on Sand-stone Permeability at Carbon Storage Conditions (Dr Omid Shahrokhi) |
| 14:40 | Mixed gas separation performance and upscaling of PolyPOSSimide membranes for $H_2$ purification (Dr Thijs Peters) | Design of integrated NOx and SOx removal in pressurized flue gas systems for carbon capture applications (Dr Fredrik Normann) | Salting out effect on the solubility of hydrogen in brines under geological-storage conditions (Dr Geraldine Torin Ollarves) | Carbon capture and storage (CCS): The way forward (Dr Mai Bui) | | Noble Gases as Monitoring Tracers: Sampling Campaigns at Capture Sites Technology Center Mongstad and Melkøya (Mr Ulrich Weber) |
| 15:00 | Optimal Process design of MDEA $CO_2$ Capture Plant for Low-Carbon Hydrogen Production (Mrs Cristina Antonini) | Solid fuels operation in a 150 kWth CFB-based Chemical Looping Combustion pilot unit (Mr Øyvind Langørgen) | Flow assurance from oil and gas to $CO_2$ transport and injection (Dr Zhilin Yang) | Approaching zero $CO_2$ emissions from future oil and gas production offshore (Dr Gelein De Koeijer) | | Dimensioning the storage concepts to support the proposed H21 North of England Hydrogen Project (Mr Rune Thorsen) |
| 15:20 | Development of nano-structured materials through a novel multi-scale modelling framework for energy conversion with $CO_2$ capture (Dr Shareq Mohd Nazir) | Cold flow experimentation of 1.5 MW Chemical Looping Combustion unit (Dr Sina Tebianian) | Network design and flexibility for low-pressure depleted gas reservoirs: hot or cold $CO_2$? (Dr Aris Twerda) | A Narrative Guide to Communicating the Potential of CCS in Decarbonising European Industry (Mr Ana Serdoner) | | What's next? Storage resources for future European CCS deployment; a roadmap for a Horda Storage Hub, offshore Norway (Ane Lothe) |

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