# Program

| Wednesday, June 17 | | | | | | |
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| 08:00 | Check-in ( next to Auditorium R1) | | | | | **Auditorium** |
| 08:30 | Welcome and conference opening, Dr. Nils A. Røkke, Chair, TCCS-8 | | | | | **Chair: Nils Røkke R1** |
| 08:40 | "Norway's strategy for CCS deployment", Mr. Nikolai Astrup, Member of the Norwegian Parliament, and Second Vice Chair of the Standing Committee on Energy and the Environment | | | | | **R1** |
| 09:00 | Keynote 1: “European position and activities on CCS”, Dr. Vassilios Kougionas, European Commission, DG Research & Innovation | | | | | **R1** |
| 09:20 | Keynote 2: "Korea’s CCS RD&D activities for climate change mitigation", Dr. Hwansoo Chong, Policy Team Leader, Korea CCS R&D Center | | | | | **R1** |
| 09:40 | Keynote 3: "CCS is live and well; Bringing the latest news from Saskatchewan", Mr. Max Ball, Manager, Carbon Capture Test Facility (CCTF), SaskPower | | | | | **R1** |
| 10:00 | Coffee Break (R1) | | | | | |
| 10:30 | Keynote 4: "Global climate challenges", Dr. Kikki (Helga) Flesche Kleiven, Associate Professor, Bjerknes Centre for Climate Research, University of Bergen | | | | | **R1** |
| 10:50 | Keynote 5: "Betting on negative emissions", Dr. Sabine Fuss, Head of "Resources and International Trade", Mercator Research Institute on Global Commons and Climate Change | | | | | **R1** |
| 11:10 | Keynote 6: "Doing what it takes in Europe – Excellent R&I collaboration across borders", Dr. Marie Bysveen, Vice President Research, SINTEF Energy Research | | | | | **R1** |
| 11:30 | Keynote 7: "Scaling of CO2 storage to enable a carbon-negative future", Mr. Frederic Hauge, Founder and President, The Bellona Foundation | | | | | **R1** |
| 11:50 | Lunch | | | | | **Realfag Restaurant** |
| 13:00 | **Session A1 (Auditorium R1)**<br>Solvent developments<br>Chair: Shujuan Wang | **Session B1 (Auditorium R5)**<br>Membranes<br>Chair: May-Britt Hägg | **Session C1 (Auditorium R2)**<br>CCSU<br>Chair: Svend Tollak Munkejord | **Session D1 (Auditorium R9)**<br>Oxy-fuel capture<br>Chair: Mario Ditaranto | **Session E1 (Auditorium S2)**<br>CO2 EOR<br>Chair: Eva Halland | **Session F1 (Auditorium S3)**<br>Remidiation and contingency planning<br>Chair: Karen Lyng Anthonsen |
| 13:00 | Amine selection for post combustion capture<br>(Gary Rochelle) | Can energy efficient membrane technology be an alternative for CO2 capture?<br>(Xuezhong He) | Acid gas removal in geothermal power plant in Iceland<br>(David Berstad) | Gas switching technology for cost effective CO2 capture chemical looping processes<br>(Abdelghafour Zaabout) | Evaluation for CO2 geo-storage potential and suitability in Dagang Oilfield<br>(Bo Peng) | MiReCOL: Developing corrective measures for CO2 storage<br>(Filip Neele) |
| 13:20 | Evolutionary design of absorbents for CO2 capture (Vishwesh Venkatraman) | Membrane properties required for post-combustion CO2 capture at coal-fired power plants<br>(Simon Roussanaly) | Assessing the potential techno-environmental performance of CO2 utilisation via dry reforming of CO2 for the production of dimethyl ether<br>(Wouter Schakel) | The potential benefit of using CLC in industrial boilers<br>(Kristin Jordal) | Large scale tertiary CO2 EOR in mature water flooded Norwegian oil fields<br>(Erik Lindeberg) | First field example of remediation of unwanted migration from a natural CO2 reservoir: the Bečej field, Serbia<br>(Filip Neele) |
| 13.40 | Strong bicarbonate forming solvent for CO2 capture<br>(Ardi Hartono) | An atomistic structure of carbon membranes from genetic algorithm and reactive force field study<br>(Thuat T. Trinh) | Poly(amidoamin) for CO2-free H2 production<br>(Ikuo Taniguchi) | Ash and deposition behaviour in air and oxy-fuel combustion<br>(Reinhold Spörl) | Midterm injection phase results for the Midwest Regional Carbon Sequestration Partnership Large-Scale Test<br>(Neeraj Gupta) | The use of polymer-gel solutions for CO2 flow diversion and mobility control within storage sites<br>(Sevket Durucan) |
| 14:00 | **Session A2 (Auditorium R1)**<br>Solvent properties, degradation and corrosion<br>Chair: Philip Fosbøl | **Session B2 (Auditorium R5)**<br>Membranes, membrane contactors and adsorption<br>Chair: Karl Anders Hoff | **Session C2 (Auditorium R2)**<br>Transport<br>Chair: Gelein De Koeijer | **Session D2 (Auditorium R9)**<br>Oxy-fuel capture<br>Chair: Carlos Abanades | **Session E2 (Auditorium S2)**<br>Site characterization<br>Chair: Andy Chadwick | **Session F2 (Auditorium S3)**<br>Remediation and contingency planning<br>Chair: David Jones |
| 14:00 | Novel piperazine-based amine solvents for flue gas CO2 capture<br>(Yang Du) | CO2 capture using a membrane pilot process at cement factory, in Brevik Norway - lessons learnt<br>(May-Britt Hägg ) | Effects of impurities in a CO2 transport experimental installation. First results and experiences at CIUDEN.<br>(Miguel Angel Delegado) | Testing of an oxy-fuel burner for gas turbine applications<br>(Mario Ditaranto) | Hydraulic characterization tests at Hontomin Technology Development Plant for CO2 Storage. Experiences with brine, CO2 and tracer injection<br>(Carlos de Dios) | Diversion of CO2 to nearby reservoir compartments for remediation of unwanted CO2 migration<br>(Lies Peters) |
| 14:20 | Enthalpy of CO2 absorption in DEEA/MAPA calculated from theoretical reaction equilibrium constants at infinite dilution<br>(Mayuri Gupta) | Compatibility of solvent/membrane systems for high performance CO2 capture using membrane contactors<br>(Luca Ansaloni) | CO2 research rig for advanced compressors (CORA): experiences and test results<br>(Christian Wacker) | Comparison of natural gas combined cycle power plants with post combustion and oxyfuel technology at different CO2 capture rates<br>(Jan Mletzko) | An open-source toolchain for simulation and optimization of aquifer-wide CO2 storage<br>(Odd Andersen) | MiReCOL – Flow diversion and pressure management as mitigation and remediation options for CO2 leakage and the CO2 venting experiment at the Ketzin site, Germany<br>(Bernd Wiese) |

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| 14:40 | Study of degradation products at different MEA based capture pilot plants<br>(Dinah Dux) | Investigation of an intensified CO2 capture process – reactive and enzymatic capture in membrane contactors<br>(Mathias Leimbrink) | Medium scale CO2 releases<br>(Jerome Hebrard) | Performance and operability of a 150 kW Chemical Looping Combustion reactor system for gaseous fuels using CMT type oxygen carrier<br>(Øyvind Langørgen) | Storage capacity estimation for selected formations in the Nordic countries using reservoir and basin modelling approaches<br>(Ane Lothe) | MiReCOL: Remediation of shallow leakage from a CO2 storage site<br>(Mark Wilkinson) |
| 15:00 | Corrosion evaluation of MEA solutions by SEM-EDS, ICP-MS and XRD<br>(Georgios Fytianos) | Adsorbent characterization for the development of carbon capture processes<br>(Max Hefti) | Phase equilibria measurements of CO2-N2 and CO2-O2 system<br>(H. G. Jacob Stang) | Effect of iron substitution on redox kinetics of CaMn0.875-xFexTi0.125O3-δ<br>(Vincent Thoréton) | Perturbative studies to calculate the permeability and porosity of a CO2 storage formation<br>(Rocio Maldonado) | Feasibility of foam injection for remediation of CO2 leakage through fractures and faults<br>(Dag Wessel-Berg) |
| 15:20 | Coffee Break (R5) | | | | | |
| 15:20 | Poster Session | | | | | **In front of R7, R8, R9** |
| 16:00 | **Session A3 (Auditorium R1)**<br>Kinetics and mass transfer<br>Chair: Gary Rochelle | **Session B3 (Auditorium R5)**<br>Novel technologies<br>Chair: Partow Henriksen | **Session C3 (Auditorium R2)**<br>Transport<br>Chair: Kristin Jordal | **Session D3 (Auditorium R9)**<br>Oxy-fuel capture and Pre-combustion capture<br>Chair: Jon Gibbins | **Session E3 (Auditorium S2)**<br>Site characterization<br>Chair: Alv-Arne Grimstad | **Session F3 (Auditorium S3)**<br>Geophysical monitoring<br>Chair: Peter Frykman |
| 16:00 | Reaction enhancement of post-combustion carbon capture using carbonic anhydrase<br>(Maria Gundersen ) | High performance capture - Evaluating novel capture technologies<br>(Hanne Kvamsdal) | Discussion and experimental validation of two-phase flow models for CO2-rich mixtures in pipes<br>(Svend Tollak Munkejord) | Turbulent premixed flames at high Karlovitz numbers under oxy-fuel conditions<br>(Yang Chen) | Numerical modelling of physicochemical effects of discrete CO2-SO2 mixtures; potential cost effects for injection and storage of impure CO2 in a sandstone aquifer<br>(Svenja Waldmann) | Volumetric bounds on subsurface fluid substitution using 4D seismic time-shifts with an application at Sleipner, North Sea<br>(Peter Bergmann) |
| 16:20 | Kinetic modeling of carbamate formation in concentrated 2-piperidineethanol (2PE)<br>(Brent Sherman) | Reversible light driven CO2 capture<br>(Robert Bennett) | Measurements of CO2-rich mixture properties: Status and CCS needs<br>(Sigurd Weidemann Løvseth) | Processing and evaluation of perovskite Mn-based oxygen carrier for chamical looping combustion<br>(Frank Snijkers) | Fractures and faults analysis for site characterization applied to a CCS project in Italy: the Sulcis basin<br>(Stanely Beaubien) | Surface-downhole geoelectrics for post-injection monitoring at the Ketzin pilot site<br>(Dennis Rippe) |
| 16:40 | Combined heat and mass transfer phenomenon in CO2 absorption: effect of water condensation/evaporation on mass transfer<br>(Koteswara Rao Putta) | Influence of moisture on multi-walled carbon nanotubes with polyaspartamide for CO2 capture<br>(Jacob Masiala Ngoy) | Validation of a coupled fluid-structure model for fracture propagation control in CO2 pipelines<br>(Håkon Nordhagen) | Effect of the presence of water-soluble amines on the carbon dioxide (CO2) adsorption capacity of amine-grafted poly-succinimide (PSI) adsorbent during CO2 capture<br>(Tafara Chitsiga) | Multiphase flow and residual trapping of CO2-brine systems at CO2 storage reservoir conditions<br>(Sam Krevor) | Forensic analysis of a carbon-dioxide layer at Sleipner from time-lapse 3D seismics<br>(Andy Chadwick) |
| 17:00 | Experimental determination of mass-transfer coefficients and area of dumped packing using alkanolamine solvents<br>(Diego Pinto) | CO2 separation and utilization via dual-phase high-temperature membranes<br>(Wen Xing) | CCS system modelling: Enabling technology to help accelerate commercialization and reduce technology risk – A case study on the operation of CCS networks<br>(Mario Calado) | Determining the potentialities of PSA processes for CO2 capture in Integrated Gasification Combined Cycle (IGCC)<br>(Luca Riboldi) | Revisiting Sleipner: An improved approach to Sleipner reservoir history matching<br>(Jacob Bensabat) | Time-lapse seismic modeling for a carbon capture and storage project in Canada: a poroelastic approach<br>(Shahin Moradi) |
| 17:20 | End of Day 1 | | | | | **Busses to hotel** |
| 19:30 | Conference Dinner | | | | | **Scandic Nidelven Hotel** |

| Thursday, June 18 | | | | | | |
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| 08:30 | Opening address: “The need for continued focus on CCS ”, Dr. Hallvard Svendsen,Professor, NTNU | | | | | **Chair: Hallvard Svendsen R1** |
| 08:40 | Keynote 8: "How TCM plays a central role in progressing carbon capture globally ", Mr. Roy Vardheim, CEO, TCM DA | | | | | **R1** |
| 09:00 | Keynote 9:"Implementing ECCSEL, the pan-European CCS research infrastructure", Dr. Sverre Quale, Project Director, NTNU | | | | | **R1** |
| 09:20 | Keynote 10: "Thermodynamic properties for CO2 transport and storage – The challenge of a consistent description", Dr. Roland Span, Professor, Ruhr Universität Bochum | | | | | **R1** |
| 09:40 | Award winner's lecture | | | | | **R1** |
| 10:00 | Coffee Break (R1) | | | | | |
| 10:20 | **Session A4 (Auditorium R1)**<br>Process and solvent comparison<br>Chair: Alfons Kather | **Session B4 (Auditorium R5)**<br>Desorber performance and transient operation<br>Chair: Mathieu Lucquiaud | **Session C4 (Auditorium R2)**<br>Public acceptance/communication and International R&D, pilots and large-scale<br>Chair: Henk Pagnier | **Session D4 (Auditorium R9)**<br>Pre-combustion capture<br>Chair: Thijs Peters | **Session E4 (Auditorium S2)**<br>Storage site integrity<br>Chair: Malin Torsæter | **Session F4 (Auditorium S3)**<br>Storage Capacity II<br>Chair: Filip Neele |
| 10:20 | Multivariable optimization of piperazine CO2 post-combustion capture process<br>(Jozsef Gaspar) | Pilot plant results for 5 m piperazine with the advanced flash stripper<br>(Eric Chen) | Factors of acceptance for CO2 storage in Germany<br>(Diana Schumann) | Thermodynamic analysis of reforming processes<br>(Shareq Mohd Nazir) | Impacts of thermally induced stresses on fracture stability during geological storage of CO2<br>(Victor Vilarrasa) | Continuous monitoring of near surface gases at a natural CO2 emission site near Rome – lessons for low-level CO2 leakage detection<br>(David Jones) |
| 10:40 | Process modeling of post combustion carbon capture with an AMP/PZ solvent blend: model development and validation, and modeling of commercial size plant<br>(Mijndert van Der Spek) | Development of compact CO2 capture technology with a rotating desorber<br>(Gelein de Koeijer) | European CCS demonstration project network: Status and developments<br>(Zoe Kapetaki) | MOFs towards application: requirements for use within CO2 capture<br>(Richard Blom) | Analysis of in-situ stress and fault reactivation potential for a major candidate storage aquifer<br>(John Williams) | Operationally relevant outcomes for CCS from a controlled sub-sea floor CO2 release. The QICS experiment<br>(Jerry Blackford) |
| 11:00 | Experimental investigation of CO2 capture by aqueous (AMP+PZ) and MEA solvents<br>(Lucyna Wieclaw-Solny) | Heat-integrated liquid–desorption exchanger (HILDE) for CO2 desorption<br>(Leen van Der Ham) | 10 years with CLIMIT- R&D&D within geological storage: Achievements and future challenges<br>(Aage Stangeland) | A new adsorbent material that can simplify simultaneous H2 production and integrated CO2 capture<br>(Carlos Grande) | Fluid conducting chimneys: mechanism of formation and implications for fluid injection operations<br>(Viktoriya Yarushina) | Minimizing water production for large-scale pressure management in CCS<br>(Carsten M. Nielsen) |
| 11:20 | Comparison of MEA and a novel generic solvent: NGCC efficiency, equipment size and cost<br>(Daniel Perez Clos) | A pilot-scale study of dynamic operating scenarios for flexible post-combustion CO2 capture<br>(Paul Tait) | Carbfix-2 project: solubility and mineral storage of gas mixtures in basalt<br>(Sigurdur Gislason) | Development of agglomerated CO2 sorbent with enhanced chemical and mechanical stability for hydrogen production<br>(Saima Kazi) | Coupled reservoir and geomechanical modeling and hysteresis effects on caprock integrity for CO2 storage projects<br>(Somayeh Goodarzi) | The scale and development timeline of the European CO2 storage industry<br>(Jonas Helseth) |
| 11:40 | Lunch | | | | | **Realfag Restaurant** |
| 12:40 | **Session A5 (Auditorium R1)**<br>Environmental aspects<br>Chair: Hanna Knuutila | **Session B5 (Auditorium R5)**<br>Transient operation<br>Chair: Magne Hillestad | **Session C5 (Auditorium R2)**<br>International R&D, pilots and large-scale<br>Chair: Sigmund Størset | **Session D5 (Auditorium R9)**<br>Whole system issues<br>Chair: Cato Christiansen | **Session E5 (Auditorium S2)**<br>Advanced gas turbine cycles and Carbon negative solutions<br>Chair: Roland Span | **Session F5 (Auditorium S3)**<br>Well integrity<br>Chair: Pierre Cerasi |
| 12:40 | Micro-encapsulated carbon sorbents<br>(Roger Aines ) | Experimental validation of a dynamic model for post-combustion CO2 capture<br>(Nina Enaasen) | CCS in the Nordic region<br>(Ragnhild Skagestad) | Thermodynamic benchmarking of CO2 separation processes – comparison between ideal and real processes<br>(Rahul Anantharaman) | Selective exhaust gas recirculation in combined cycle gas turbine power plants with post-combustion carbon capture<br>(Laura Herraiz) | 1:1 scale wellbore experiment for a better understanding of well integrity in the context of CO2 geological storage, Mont Terri underground rock laboratory<br>(Christophe Nussbaum) |
| 13:00 | Qualifying amine based capture technologies with respect to health and environmental properties<br>(Laila Iren Helgesen) | Dynamic simulation of natural gas combined cycle power plant with post-combustion CO2 capture<br>(Ruben Mocholi Montañes) | Norcem CO2 capture project<br>(Liv Bjerge) | Comparison of natural gas combined cycle power plants with post combustion and oxyfuel technology at different CO2 capture rates<br>(Jan Mletzko) | Carbon-negative biopower via direct conversion and co-firing: Systemic impacts of capture and storage of CO2 applied to Indonesia<br>(Jens Hetland) | Remediation of leakage through annular cement<br>(Jelena Todorovic) |

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| 13:20 | Accumulation of absorbed fly ash particulate matter and its impact on the CC process<br>(Bernd Schallert) | Dynamic operation and simulation of post-combustion CO2 capture<br>(Jozsef Gaspar) | Chilled ammonia process operation and results from pilot plant at Technology Centre Mongstad<br>(Barath Baburao) | Flexibility issues and controllability analysis of a post-combustion CO2 capture plant integrated with a natural gas power plant<br>(Evgenia Mechleri) | Pilot-scale demonstration of oxy-SER steam gasification: Production of syngas with pre-combustion CO2 capture<br>(Daniel Schweitzer) | Experimental study of wellbore cement-rock interaction for short and long-term CO2 storage assessment<br>(Qi Liu) |
| 13:40 | Aerosols in amine based carbon capture<br>(Jan Mertens) | Dynamic modelling and operation of a state-of-the-art coal-fired power plant integrated with post-combustion CO2 capture system<br>(Stefanía Ósk Garðarsdóttir) | CEMCAP – a Horizon2020 project on CO2 capture from cement industry<br>(Kristin Jordal) | Gas turbine repowering options for carbon capture retrofit<br>(Maria Sanchez Del Rio) | Multi-scale modelling of carbon negative electricity generation in the UK<br>(Niall MacDowell) | Evaluation of coupled geochemical and geomechanical mechanisms controlling CO2-brine leakage along a wellbore<br>(Yue Hao) |
| 14:00 | Coffee Break (R1 + S3) | | | | | |
| 14:20 | **Session A6 (Auditorium R1)**<br>Aerosol, emissions and analyses<br>Chair: Bernd Schallert | **Session B6 (Auditorium R5)**<br>Ammonia and carbonate based systems<br>Chair: Stephen Bedell | **Session C6 (Auditorium R2)**<br>CCS in energy intensive industries<br>Chair: Tore A. Torp | **Session D6 (Auditorium R9)**<br>CCS whole system issues<br>Chair: Marit Mazzetti | **Session E6 (Auditorium S2)**<br>Carbon negative solutions<br>Chair: Antti Arasto | **Session F6 (Auditorium S3)**<br>Well integrity<br>Chair: Susan Carroll |
| 14:20 | Aerosol measurement technique: Demonstration at CO2 Technology Centre Mongstad<br>(Thomas de Cazenove) | VLE modeling of aqueous solutions of unloaded and loaded hydroxides of lithium, sodium and potassium<br>(Shahla Gondal) | Carbon capture in the pulp and paper industry: A case study of possible development scenarios<br>(Stefanía Ósk Garðarsdóttir) | Legal Instruments – obstacles or incentives for commercialising CCS?<br>(Dag Erlend Henriksen) | Environmental impact assessment of biomass gasification CHP plants with absorptive and adsorptive carbon capture units<br>(Gabriel David Oreggioni) | Effect of eccentric annulus, washouts and breakouts on well cementing quality: Laminar flow<br>(Alexandre Lavrov) |
| 14:40 | Counter-measures for aerosol-based emission<br>(Purvil Khakharia) | Solid formation in ammonia-based CO2 capture processes – Thermodynamic analysis of criticalities and implications on process design<br>(Daniel Sutter) | Calcium looping post combustion CO2 capture: A promising technology or emission free cement production<br>(Heiko Dieter) | Identifying operational requirements for flexible CCS power plant in future energy systems<br>(Ruben Mocholi Montañes) | The most promising business case for BIO-CCS in power and CHP production<br>(Antti Arasto) | Cement self-healing as a result of CO2 leakage<br>(Claus Kjøller) |
| 15:00 | Round Robin tests on nitrosamines analysis in the effluents of a CO2 capture pilot plant<br>(Isaline Fraboulet) | Thermodynamic assessment of cooled and chilled ammonia-based CO2 capture in air-blown IGCC plants<br>(Davide Bonalumi) | CO2 capture in cement plants by entrained flow reactors calcium looping process<br>(Matteo Romano) | Value chain analysis of CCS from a cement plant: a Norwegian case study<br>(Jana Jakobsen) | High efficiency carbon negative energy production - BIOZEG pilot plant operation<br>(Nicola Di Giulio) | Loss of injectivity and formation integrity due to pressure cycling<br>(Pierre Cerasi) |
| 15:20 | A theoretical assessment of the atmospheric fate of amine emissions from post combustion technology and their impacts on the human health<br>(Anna Korre) | A layout for the carbon capture with aqueous ammonia without salt precipitation<br>(Davide Bonalumi) | Use of a chilled ammonia-based process for post-combustion CO2 capture in integrated steelworks<br>(Matteo Gazzani) | Modeling bioenergy with carbon capture and storage - A scenario assessment for Indonesia<br>(Florian Kraxner) | CO2 capture and re-use at a waste incinerator<br>(Patrick Huttenhuis) | Three-dimensional visualization of natural convection in porous media<br>(Lei Wang) |
| 15:40 | Closing Remarks - Dr. Mona Mølnvik, Research Director, SINTEF Energy Research | | | | | **R1** |
| 16:00 | End of Conference | | | | | |