



TUESDAY, OCTOBER 13TH, 2020

14.00 CET

WEBINAR

**CO₂ capture
technology by
membranes, sorbents
and solvents**

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AGENDA

Michela Vellico - introduction on ECCSEL and the webinars series
Thijs Peters - CO₂ capture with membrane technology
Richard Blom - Sorbents for CO₂ capture processes
Karl Anders Hoff - Solvents for CO₂ capture applications
Q&A - chaired by Alberto Pettinau

WHAT YOU WILL LEARN

In this webinar three experienced SINTEF scientists will introduce the audience to state-of-the-art technologies for CO₂ capture based on gas separation membranes, solid CO₂ sorbents, and liquid CO₂ solvents. The speakers will present examples from current research and explain the capabilities of SINTEF's ECCSEL laboratory facilities.

CO₂ capture with membrane technology

For mitigation of CO₂ emissions membrane technology can give valuable contributions in many industrial and power generation processes. Some important applications are for natural gas sweetening, post-, pre- and oxy-combustion processes, CO₂ capture from industrial process streams, and in process intensification to improve yield and reduce energy consumption. The current contribution will summarise the state-of-the-art of this 2nd generation capture technology and introduce relevant research infrastructure available at SINTEF.

Sorbents for CO₂ capture processes

When developing solid sorbent-based technologies for CO₂ capture, there is a close link between the sorbent material properties and the type of process addressed, such as pressure swing (PSA), vacuum swing (VSA) and temperature swing adsorption (TSA). The infrastructures needed for this development are linked to the physical characterization and measurement of gas adsorption isotherms and sorption kinetics of solid sorbents needed for process modelling. In addition, small scale pilot separation processes are needed to validate the modelling work of the process investigated. In this presentation, the relevant infrastructure for this development will be described.

Solvents for CO₂ capture applications

Reactive or physical absorption with solvents is the most abundant gas purification technology by number of installations. For post-combustion CO₂ capture, research on absorption processes with amine-based solvents has developed high performance solvent systems and process configurations with low energy requirement and high stability, integrated with the flue gas source and with subsequent CO₂ liquefaction. These developments, still ongoing, are based on the interaction between the solvents' physical, thermodynamic and kinetic properties, process modelling, pilot testing and process optimisation.

SINTEF has been involved in solvent development for CCS applications for three decades. This presentation will highlight the main features and state-of-the-art for absorption-based systems as well as the most important research infrastructure.

**FOR FURTHER
INFORMATION
VISIT OUR WEBSITE:**

WWW.ECCSEL.ORG

**[HTTPS://ECCSEL.ORG/
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ECCSEL ERIC (European Research Infrastructure Consortium) was established in June 2017 as a permanent pan-European distributed research infrastructure, with the main objective of enhancing European science, technology development, innovation and education in the field of CCUS, in order to combat climate change.

ECCSELERATE project is aimed at increasing the accessibility to the excellent network of facilities already established in ECCSEL ERIC for a wider user group, part of the research and industrial community.