

Parallel Sessions

Session I: Hydrogen, Sustainable Aviation Fuels (SAF), Bio-CCS and Bio-CCU (Room: MR 109 AB)

Chairperson: Prof. Dr. Navadol Laositipojana and Dr. Frank Richter, CEO, Greenectra OÜ, Estonia

The globally significant type of fuel currently garnering attention for study and research is green hydrogen. Green hydrogen is utilized alongside fuel cells for power generation and as a substitute for fossil fuels in vehicle applications. It is also employed for heat in industries requiring high-temperature processes and serves as a precursor in the chemical and sustainable aviation fuel (SAF) industries. Hydrogen can be synthesized from a variety of natural raw materials such as biomass, biogas, and natural gas. In theory, hydrogen can be produced from substances like water and hydrocarbon compounds (e.g., biomass and fossil fuels). The production process can be categorized into three main methods: electrochemical processes for water splitting, thermochemical processes, and biochemical processes. Hydrogen produced from water through electrolysis, using electricity from nuclear or renewable sources like solar energy, does not emit carbon dioxide, but its production cost remains high. Hydrogen produced through thermochemical processes utilizes reactions such as steam reforming, gasification, or pyrolysis to transform hydrocarbon compounds. Hydrogen produced through biochemical processes, termed "biohydrogen," involves using microorganisms to convert organic waste and biomass into hydrogen gas. The process of producing green hydrogen that is both suitable and cost-effective is currently of paramount importance worldwide.

In this session, you'll discover hydrogen technology. We'll delve into its academic and research aspects, as well as see the applications through successful industry examples.

13.30-14.00 **Will hydrogen make our energy future?**

Prof. Dr. Christoph Menke, University of Applied Sciences Trier Germany (online)

14.00-14.30 **Bio-energy Solutions in Thailand: H₂ Production from Biogas and Sustainable Aviation Fuel (SAF)**

Dr. Visarn Lilavivat, National Energy Technology Center (ENTEC), Thailand

14.30 – 15.00 **A comparison of hydrogen and Li-ion battery technology**

Dr. Frank Richter, CEO, Greenectra OÜ, Estonia

15.00 – 15.30 **Bio-CCUS**

Dr. Verawat Champreda

The National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand