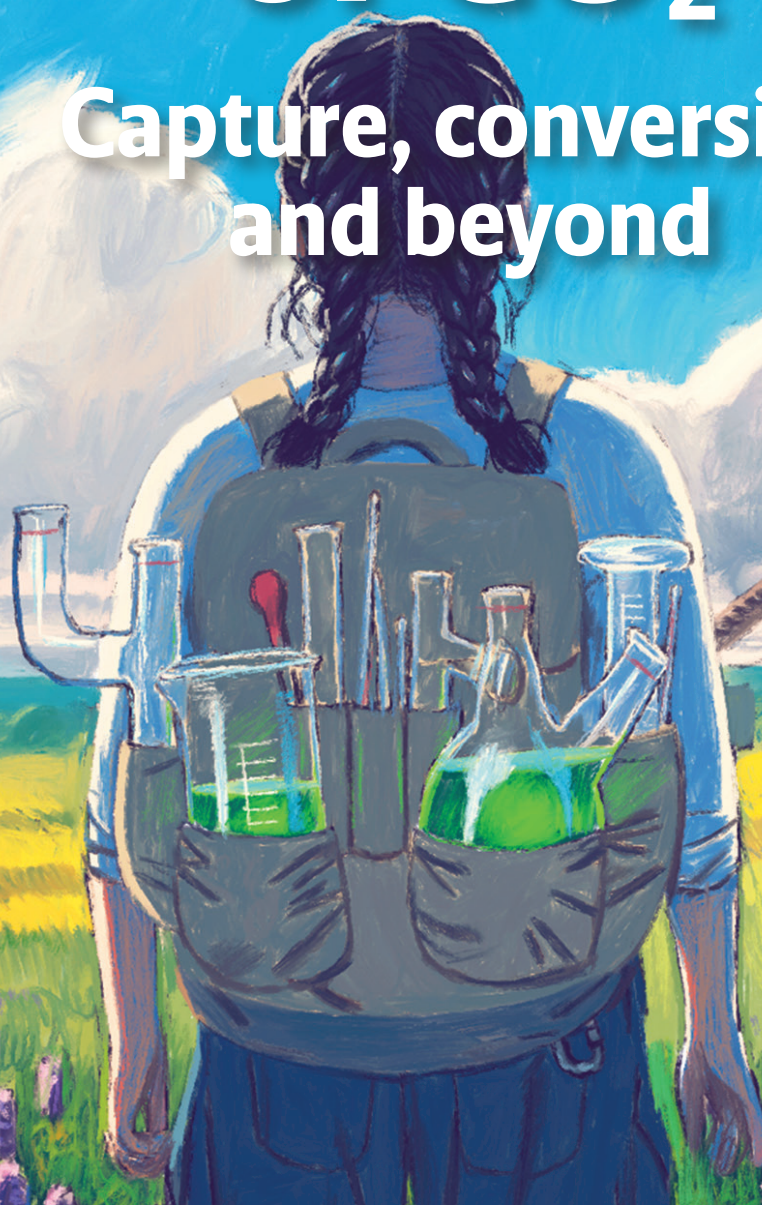


**Conference 2024**

**9 - 13 September**

# **Dream reactions of CO<sub>2</sub>**

**Capture, conversion  
and beyond**



Programme

## Monday 9 September 2024

17:15 Transportation to Favrholm from Hotel Hillerød and Zleep

17:15 - 17:45 Poster Hang up

17:45 - 19:00 Dinner at Favrholm

19:15 - 19:30 **Official Opening by the Novo Nordisk Foundation**  
**Welcome by Henning Jørgensen**, Senior Scientific Manager, Novo Nordisk Foundation

### 19:30 - 21:00 SESSION 1: Opening Session

**Welcome by committee chair and introduction to speakers: Jiwoong Lee**, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER: Tobias Erb**, Max Planck Institute for Terrestrial Microbiology, Germany  
*Breaking the limits of natural photosynthesis with synthetic biology: Building complex molecules out of thin air*

**INVITED SPEAKER: Jeffrey Reimer**, UC Berkely, United States  
*Does a Molecular View of Carbon Capture Matter?*

21:00 - 22:30 Drinks & networking

## Tuesday 10 September 2024

### 09:00 - 10:30 SESSION 2: Innovations and Challenges in Carbon Capture and Utilization

**CHAIR: Marta Victoria**, Aarhus University, Denmark

**INVITED SPEAKER: Susana Garcia Lopez**, Heriot-Watt University, Scotland  
*Exploring the Frontiers for Carbon Capture: Navigating from System Analysis down to Density Functional Theory and back*

**SHORT TALK: Viviënne Mol**, Again, Denmark  
*Demonstrating sustainable value creation from industrial CO<sub>2</sub> by its thermophilic microbial conversion into acetone*

**INVITED SPEAKER: Jay Fuhrman**, Pacific Northwest National Laboratory, United States  
*Challenges and Opportunities in Carbon Capture, Utilization, and Re-moval*

10:30 - 11:00 Coffee break

### 11:00 - 12:45 SESSION 3: Pioneering Strategies in CO<sub>2</sub> Utilization: From Circular Manufacturing to Sustainable Food Production

**CHAIR: Lars Angenent**, University of Tübingen & Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark & Germany

**INVITED SPEAKER: Michael Köpke**, LanzaTech, United States  
*Re-imagining manufacturing: Building a circular gas fermentation industry*

**SHORT TALK: Jörg Deutzmann**, Stanford University, Novo Nordisk Foundation CO<sub>2</sub> Research Center, United States, Denmark  
*Improved reactor design enables high productivity of microbial electrosynthesis*

**INVITED SPEAKER: Ted Sargent**, Northwestern University, Canada  
*Electrifying CO<sub>2</sub> capture and Upgrade*

**SHORT TALK: Myrsini Sakarika**, Ghent University, Belgium  
*From dream reactions to dinner tables: Can captured CO<sub>2</sub> fuel sustainable microbial food production?*

12:45 - 13:45 Lunch

**13:45 - 15:30** SESSION 4: Innovative Carbon Capture Technologies 1

**CHAIR:** Peter Westh, Technical University of Denmark & Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER:** Klaus Skaalum Lassen, Novonosis, Denmark  
*Enzymatic Carbon Capture*

**SHORT TALK:** Margarita Poderyte, University of Copenhagen, Denmark  
*CO<sub>2</sub>-sorbents derived from PET Waste via Aminolysis*

**INVITED SPEAKER:** Paul Dauenhauer, University of Minnesota, United States  
*Overcoming the Entropy Penalty of Direct Air Capture for Efficient Gigatonne Removal of Carbon Dioxide*

**15:30 - 17:30** POSTER SESSION

**17:45 - 20:00** Dinner

**20:00 - 22:00** PI Pub / Editors' Corner

## Wednesday 11 September 2024

**09:00 - 10:45** SESSION 5: Advancing (Bio)Catalytic CO<sub>2</sub> Conversion

**CHAIR:** Lars Ottosen, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER:** Linn Edda Sommer, Topsoe, Denmark  
*Heterogeneous catalysis for CO<sub>2</sub> utilization – industry perspective*

**SHORT TALK:** Neha Bansal, Lawrence Berkeley National Laboratory, United States  
*Syngas fermentation: advancing C1 biomanufacturing through innovative strain engineering and process development*

**INVITED SPEAKER:** Diana Sousa, Wageningen University, The Netherlands  
*Dream matches in the lab: Microbial co-cultures for diversifying syngas fermentation products*

**SHORT TALK:** Johannes G Rebelein, Max Planck Institute for Terrestrial Microbiology, Germany  
*Designing a New Pathway for CO<sub>2</sub> Conversion: Evolution, Mechanism and Engineering of Nitrogenases*

**10:45 - 11:15** Coffee break

**11:15 - 12:45** SESSION 6: Innovative Carbon Capture Technologies 2

**CHAIR:** Kim Daasbjerg, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER:** Jessica Strefler, Potsdam Institute for Climate Impact Research, Germany  
*Low-risk carbon removal pathways*

**SHORT TALK:** Sonja Salmon, North Carolina State University, United States  
*Advancing Biocatalytic Textiles for CO<sub>2</sub> Capture and Conversion*

**INVITED SPEAKER:** T Alan Hatton, Massachusetts Institute of Technology, United States  
*Electrochemical Modulation of Selective CO<sub>2</sub> Separation Processes*

**12:45 - 13:00** Group photo

**13:00 - 14:00** Lunch

**14:00 - 16:00** POSTER SESSION

**16:00 - 17:00** Transport to Copenhagen

**17:00 - 22:30** Social Outing and Dinner

**22:30 - 23:30** Transport to Hotel Hillerød, Zleep Hotel and Favrholm

## Thursday 12 September 2024

### 09:00 - 10:30 SESSION 7: Utilization of Electrons

**CHAIR: Matteo Cargnello**, Stanford University & Novo Nordisk Foundation CO<sub>2</sub> Research Center, United States & Denmark

**INVITED SPEAKER: Erwin Reisner**, University of Cambridge, United Kingdom  
*Artificial Photosynthesis and Solar Reforming for CO<sub>2</sub> fixation*

**SHORT TALK: Tannu Kaushik**, Indian Institute of Technology Bombay, India  
*Hot Electron-mediated Photoelectrochemical CO<sub>2</sub> Conversion using a Plasmonic Gold Triangular Nanoprism-Copper Molecular Catalyst Hybrid under Full-Solar Spectrum*

**INVITED SPEAKER: Ross Milton**, University of Geneva, Switzerland  
*Electroenzymatic conversion of hydrogen, carbon dioxide and nitrogen*

10:30 - 11:00 Coffee break

### 11:00 - 12:45 SESSION 8: Comprehensive Approaches to CO<sub>2</sub> Utilization

**CHAIR: Troels Skrydstrup**, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER: Lars Keld Nielsen**, Technical University of Denmark, Denmark  
*C1 Atlas*

**SHORT TALK: Benjamin Buckley**, Loughborough University, United Kingdom  
*Selective Carboxylation of Olefins Utilising CO<sub>2</sub> and Electrosynthesis*

**INVITED SPEAKER: Matthias Beller**, Leibniz-Institut für Katalyse, Germany  
*Using carbon dioxide for producing chemicals and energy in CO<sub>2</sub>-neutral way*

**SHORT TALK: Matteo Cargnello**, Stanford University, United States  
*Capture, conversion and sequestration of CO<sub>2</sub> into fuels, chemicals, and materials*

12:45 - 13:45 Lunch

### 13:45 - 14:45 SESSION 9: Innovative Carbon Capture Technologies 3

**CHAIR: Jiwoong Lee**, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER: Alexander Forse**, University of Cambridge, United Kingdom  
*Using Supercapacitors to Capture Carbon Dioxide*

**SHORT TALK: Anna de Vries**, Swiss Federal Institute of Technology Zurich, Switzerland  
*Shedding light on CO<sub>2</sub> capture: sunlight driven pH-swing with stable and reversible photoacids*

14:45 - 15:15 Coffee break

### 15:15 - 16:45 SESSION 10: Designing and Harnessing Photoenzymes: Bio-Inspired CO<sub>2</sub> Valorization

**CHAIR: Alfred Michael Spormann**, Novo Nordisk Foundation CO<sub>2</sub> Research Center, Denmark

**INVITED SPEAKER: Adrian Bunzel**, ETH Zurich, Switzerland  
*Creating Photoenzymes by Design and Evolution*

**INVITED SPEAKER: Ariel Fust**, Massachusetts Institute of Technology, United States  
*Bio-derived and bio-inspired approaches to CO<sub>2</sub> valorization*

**SHORT TALK: Elizabeth Hann**, Harvard University, United States  
*A hybrid inorganic-biological artificial photosynthesis system for energy-efficient food production*

16:45 - 17:00 Closing remarks by the Chair of the Scientific Committee

17:00 - 19:00 Transportation from Hotel Hillerød to Favrholm

19:00 - 19:45 Welcome drinks at Favrholm

19:45 - 02:00 Dinner & Party

## Friday 13 September 2024

09:00 Check-out from hotels

09:00 Bus departure from Hotel Hillerød → Favrholm campus → City centre → Copenhagen airport