# NPS19

Netherlands Process technology Symposium

# Bridging Sustainable Process and Product Technology

## 8 & 9 October 2024

**Program**

Forum Groningen | Nieuwe Markt 1 | 9712 KN Groningen

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# Word of Welcome

We hope you enjoy reading this program book for the 19th edition of the Netherlands Process technology Symposium (NPS 19) to be held in Forum Groningen on 8 to 9 October 2024.

NPS 19 is the leading event to highlight academic achievements in the Netherlands and beyond in chemical engineering and related fields. It provides a great opportunity to connect academia, industry, and society. The theme of NPS 19 is “Bridging sustainable process and product technology”. The development of sustainable processes and the design and manufacture of environmentally benign (bio-based) chemical products are key to addressing societal challenges. The program is a combination of plenary talks, keynote lectures, and oral and poster presentations

**Jun Yue, Hero Jan Heeres,**

**Paolo P. Pescarmona, Jingxiu Xie, Vassilis Kyriakou**

# Timetable



*8th of October*

| Time | Room | | | |
|---|---|---|---|---|
| | NOK | Camera 4 | Camera 1 | Rabo Studio |
| 08:30 - 09:00 | Registration (Forum Atrium, Ground Floor) | | | |
| 09:00 - 10:45 | Opening, Welcome and Plenary I & II (Rabo Studio) | | | |
| 10:45 - 11:15 | Coffee Break (Atrium) | | | |
| 11:15 - 12:30 | Parallel 1.1<br>Renewable carbon conversion | Parallel 1.2<br>(Bio)chemical Process Engineering | Parallel 1.3<br>Electrochemical Engineering<br>*(incl. Keynote 1)* | Parallel 1.4<br>Design of (Bio)chemical Products & Materials<br>*(incl. Keynote 2)* |
| 12:30 - 13:30 | Lunch Break (Atrium) | | | |
| 13:30 - 14:45 | Parallel 2.1<br>Process Systems Engineering | Parallel 2.2<br>(Bio)chemical Process Engineering<br>*(incl. Keynote 3)* | Parallel 2.3<br>Reaction and Catalytic Engineering | Parallel 2.4<br>Separation Technology & Transport Phenomena<br>*(incl. Keynote 4)* |
| 14:45 - 15:15 | Coffee Break (Atrium) | | | |
| 15:15 - 16:00 | Plenary III (Rabo Studio) | | | |
| 16:00 - 17:00 | Poster Parade & Sponsor Pitch (Rabo Studio) | | | |
| 17:00 - 18:30 | Poster Session & Welcome Reception (Atrium) | | | |
| 19:00 - 22:00 | Conference Dinner (Rabo Studio) | | | |

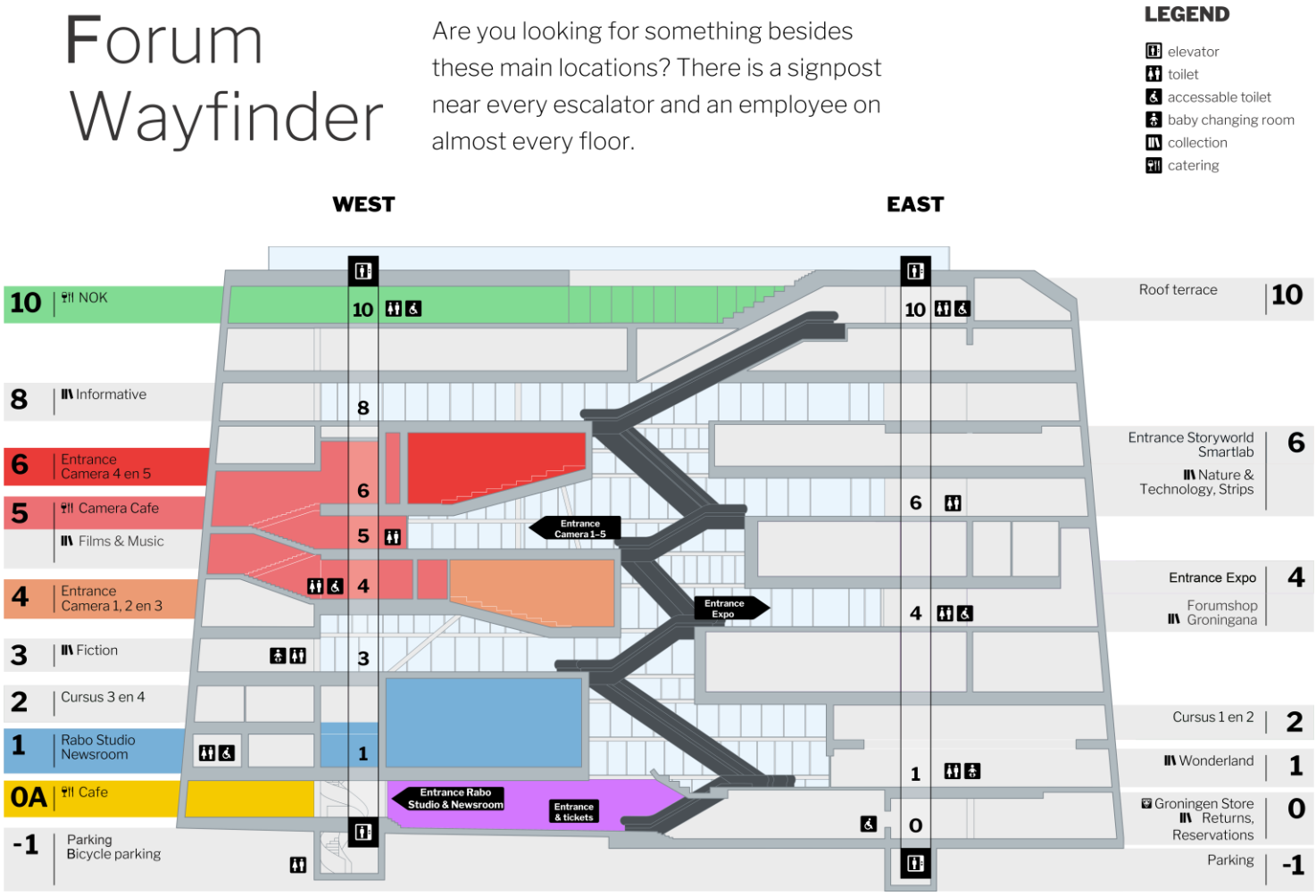
*9th of October*

| Time | Room | | | |
|---|---|---|---|---|
| | NOK | Camera 4 | Camera 1 | Rabo Studio |
| 08:30 - 09:00 | Registration (Forum Atrium, Ground Floor) | | | |
| 09:00 - 10:00 | Announcements and Plenary IV (Rabo Studio) | | | |
| 10:00 - 10:45 | Poster Parade (Rabo Studio) | | | |
| 10:45 - 11:15 | Coffee Break (Atrium) | | | |
| 11:15 - 12:30 | Parallel 3.1<br>Process Systems Engineering<br>*(incl. Keynote 5)* | Parallel 3.2<br>(Bio)chemical Process Engineering | Parallel 3.3<br>Electrochemical Engineering | Parallel 3.4<br>Separation Technology & Transport Phenomena |
| 12:30 - 13:45 | Lunch Break and Poster Session (Atrium) | | | |
| 13:45 - 15:00 | Parallel 4.1<br>Renewable carbon conversion | Parallel 4.2<br>Reaction and Catalytic Engineering<br>*(incl. Keynote 6)* | Parallel 4.3<br>Electrochemical Engineering | Parallel 4.4<br>Separation Technology & Transport Phenomena |
| 15:00 - 15:30 | Coffee Break (Atrium) | | | |
| 15:30 - 16:30 | Hoogewerff Gold Medal Ceremony and Lecture Plenary V (Rabo Studio) | | | |
| 16:30 - 17:00 | Awards & Closing Ceremony (Rabo Studio) | | | |

## *Venue*

NPS 19 will be hosted in the Forum Groningen (Nieuwe Markt 1, 9712 KN Groningen), right in the city center of Groningen. It is within twenty minutes walking distance from the central station of Groningen, but there are also bus connections. Please check the 9292 website for more information on the bus connections and schedules.

## *Map of Forum Groningen*



# Theme, topics & Instructions 6

## *Theme and topics*

The theme of NPS 19 is “Bridging sustainable process and product technology”, centered around 7 topics:

- Renewable carbon conversion
- (Bio)chemical Process Engineering
- Electrochemical Engineering
- Design of (Bio)chemical Products & Materials
- Reaction and Catalytic Engineering
- Separation technology & Transport Phenomena
- Process System Engineering

## *Instructions for presenters*

Please contact the chair of your session 10 minutes prior to the start of your parallel session. Please also make sure that you upload and test your presentation.

**Plenary**
Timing: 40 minutes presentation + 5 minutes discussion

**Keynote**
Timing: 25 minutes presentation + 5 minutes discussion

**Oral**
Timing: 12 minutes presentation + 3 minutes discussion

**Poster**
A0 Poster

**Poster & sponsor pitch**
Maximum 3 slides (pitch presentation of 90 seconds)

*8th & 9th of October*

## Monday 7th of October 2024

### NPS Business Dinner (by invitation only)

From 19:00 to 22:00, Prinsenhof

## Tuesday 8th of October 2024

### Registration

From 8:30 to 9:00, Forum (Ground floor)

### Welcome and Plenary Lecture I & II

From 9:00 to 10:45, Forum (Rabo Studio)

Chaired by: Jun Yue & Jingxiu Xie

**9:00** **Opening and welcome**

**9:15** **[PL01] Title:** The long road of scaling renewable chemical process technology. The Avantium story on how to bring the new, plant-based polyester PEF to market
**Presenter:** Tom van Aken (Avantium)

**10:00** **[PL02] Title:** From Applications to Fundamentals: The Power of Multiscale Modelling
**Presenter:** Raffaella Ocone (Heriot-Watt University)

### Coffee Break

From 10:45 to 11:15, Forum (Ground floor)

### Parallel Session 1.1 Renewable Carbon Conversion

From 11:15 to 12:30, Forum (NOK)

Chaired by: Peter Deuss

**11:15** **[OP01] Title:** Biphasic furfural synthesis from biorefinery feed using coated 3D foam structures
**Presenter:** Adarsh Patil (Eindhoven University of Technology)

**11:30** **[OP02] Title:** Transformation of glucose to 5-hydroxymethylfurfural over $AlCl_3$ catalyst in water: the effect of choline chloride addition
**Presenter:** Chencong Ruan (University of Groningen)

**11:45** **[OP03] Title:** Power-to-Methanol: techno-economical evaluation of a digestion use-case
**Presenter:** Hans Gelten (Saxion University of Applied Science)

**12:00** **[OP04] Title:** Synthetic kerosene from $CO_2$-rich synthesis gas via Fischer-Tropsch synthesis
**Presenter:** Bart C.A. de Jong (University of Groningen)

**12:15** **[OP05] Title:** Highly Active and Selective Borophene based catalysts for Reverse Water Gas Shift Reaction
**Presenter:** Rajamohanan Sobhana Anju (University of Amsterdam)

## Parallel Session 1.2 (Bio)chemical Process Engineering

From 11:15 to 12:30, Forum (Camera 4)

Chaired by: Peter de Jong

**11:15** **[OP06] Title:** Supercritical $CO_2$ as effective wheat straw pretreatment for subsequent mild fractionation strategies
**Presenter:** Salvador Bertran-Llorensa (University of Groningen)

**11:30** **[OP07] Title:** Oxidative pretreatment as a way of upgrading cellulose-rich municipal waste streams
**Presenter:** Ana Luiza Slama de Freitas (University of Groningen)

**11:45** **[OP08] Title:** Complete liquefaction of enzymatic hydrolysis lignin via non-catalytic solvolysis
**Presenter:** Xiang Li (Aalto University)

**12:00** **[OP09] Title:** A Sustainable Process Design For The Production of Nitrile Butadiene Rubber for Medical Glove Usage
**Presenter:** Shivam Pandey (Delft University of Technology)

**12:15** **[OP10] Title:** Generative artificial intelligence (AI) in chemical process engineering
**Presenter:** Artur M. Schweidtmann (Delft University of Technology)

## Parallel Session 1.3 Electrochemical Engineering

From 11:15 to 12:30, Forum (Camera 1)

Chaired by: Peter Veenstra

**11:15** **[OP11] Title:** Understanding the Selectivity of Bicarbonate Electrolysis
**Presenter:** Iris Burgers (Delft University of Technology)

**11:30** **[OP12] Title:** Modification of stainless-steel as bifunctional electrocatalysts towards high active and stable anion-exchange membrane water electrolysis
**Presenter:** Tao Jiang (University of Groningen)

**11:45** **[OP13] Title:** A computational study on the impact of electrolyzer geometry on the Faradaic efficiency of alkaline water electrolyzers
**Presenter:** Bryan Acosta-Angulo (Eindhoven University of Technology)

**12:00** **[KL01] Title:** Membrane electrolysis: essential for chemicals; enabler for sustainable process and product development
**Presenter:** Hans Lammers (Nobian Industrial Chemicals B.V.)

## Parallel Session 1.4 Design of (Bio)chemical Products & Materials

From 11:15 to 12:30, Forum (Rabo Studio)

Chaired by: Ruud van Ommen

**11:15** **[KL02] Title:** Design of sustainable polymeric products
**Presenter:** Francesco Picchioni (University of Groningen)

**11:45** **[OP14] Title:** Improved colloid stability of polymer microspheres by low temperature deposited nanofilms of $SiO_2$ in fluidized beds
**Presenter:** Rens Kamphorst (Delft University of Technology)

**12:00** **[OP15] Title:** Preparation and Selected Applications of Polymer Thin Films Synthesized by Initiated Chemical Vapor Deposition (iCVD)
**Presenter:** Yizeng Di (University of Groningen)

**12:15** **[OP16] Title:** Diels Alder and domino reactions for self-healing materials
**Presenter:** Paul van den Tempel (University of Groningen)

## Lunch Break

From 12:30 to 13:30, Forum (Ground floor)

## Parallel Session 2.1 Process System Engineering

From 13:30 to 14:45, Forum (NOK)

Chaired by: Meik Franke

**13:30** **[OP17] Title:** Techno-economic and environmental impacts of replacing fossil-based processes in the propylene subcluster in the Port of Rotterdam
**Presenter:** Inna Stepchuk (Delft University of Technology)

**13:45** **[OP18] Title:** Exploring the synergistic integration of $CO_2$ electrolysis and CCS supply chains for sustainable syngas production
**Presenter:** Thijmen Wiltinka (Delft University of Technology)

**14:00** **[OP19] Title:** Numerical and Experimental Study of the Axis-Switching Phenomena in Rectangular Jets
**Presenter:** Cristina García Llamas (Eindhoven University of Technology)

**14:15** **[OP20] Title:** Systematic methodology via a decision matrix for the quick selection of energy-efficient intensified distillation technologies
**Presenter:** Qing Li (Delft University of Technology)

**14:30** **[OP21] Title:** Modelling and Analysis of Electrolysers Integrated with Downstream Separation Systems via Heat Pumps
**Presenter:** Riccardo Dal Mas (Delft University of Technology)

## Parallel Session 2.2 (Bio)chemical Process Engineering

From 13:30 to 14:45, Forum (Camera 4)

Chaired by: Gert-Jan Euverink

**13:30** **[KL03] Title:** Without process innovation no protein transition
**Presenter:** Peter de Jong (ISPT)

**14:00** **[OP22] Title:** Performance assessment for the Twente-DAC pilot using sorbent circulation.
**Presenter:** Abhinav Srinivas (University of Twente)

**14:15** **[OP23] Title:** Coprecipitation of magnetite nanoparticles using a liquid/liquid Membrane Reactor
**Presenter:** Negar Amani Tehrani (Eindhoven University of Technology)

**14:30** **[OP24] Title:** Techno-economic assessment of a decentralized system for pure hydrogen production via green ammonia decomposition
**Presenter:** Valentina Cechetto (Eindhoven University of Technology)

## Parallel Session 2.3 Reaction and Catalytic Engineering

From 13:30 to 14:45, Forum (Camera 1)

Chaired by: Wiebren de Jong

**13:30** **[OP25] Title:** The shape-dependent activity of $Pd/CeO_2$ nanorods, nanocubes, and nano-octahedrons on lean methane oxidation
**Presenter:** Martim C. Policano (University of Twente)

**13:45** **[OP26] Title:** Integrated process development for the conversion of lignocellulosic biomass to ethylene glycol
**Presenter:** Romolo Di Sabatino (University of Twente)

**14:00** **[OP27] Title:** Morphology controlled ceria catalysts for reverse water gas shift reaction (RWGS)
**Presenter:** Pankaj Verma (University of Amsterdam)

**14:15** **[OP28] Title:** Enhancing Methane Oxidation in Maritime Engines: A Numerical Study of Pre-Reactor Temperature Control
**Presenter:** Julian C. Restrepo (University of Twente)

**14:30** **[OP29] Title:** Novel internal fin configurations for gas-liquid monolithic reactors
**Presenter:** Aniket S. Ambekar (Eindhoven University of Technology, Technical University of Munich)

## Parallel Session 2.4 Separation Technology & Transport Phenomena

From 13:30 to 14:45, Forum (Rabo Studio)

Chaired by: Raffaella Ocone

**13:30** **[OP30] Title:** Calibration of pore network models via inverse gas chromatography
**Presenter:** David Rieder (Eindhoven University of Technology)

**13:45** **[OP31] Title:** A coupled Local Front Reconstruction and Immersed Boundary Method for simulating multiphase flows with contact line dynamics
**Presenter:** Tom Janssen (Eindhoven University of Technology)

**14:00** **[OP32] Title:** Pressure drop of single- and two-phase flows in single pellet string microreactors: the influence of wall effect
**Presenter:** Lu Zhang (University of Groningen)

**14:15** **[KL04] Title:** Microfluidics enables process intensification with laser induced cavitation and inertial ballistic
**Presenter:** David Fernandez Rivas (University of Twente)

## Coffee Break

From 14:45 to 15:15, Forum (Ground floor)

## Plenary lecture III & Poster Parade & Sponsor Pitch

From 15:15 to 17:00, Forum (Rabo Studio)

Chaired by: Andrea Ramírez Ramírez & Jun Yue

**15:15** **[PL03] Title:** Year-round heat and $CO_2$ supply with combined hot water boiler and carbon capture technology
**Presenter:** Thomas Brouwe (HoSt)

**16:00** **Poster parade & sponsor pitch**

## Poster Session & Welcome Reception

From 17:00 to 18:30, Forum (Ground floor)

## Conference Dinner

From 19:00 to 22:00, Forum (Rabo Studio)

## Wednesday 9th of October 2024

### Registration

From 8:30 to 9:00, Forum (Ground floor)

### Announcements

From 9:00 to 9:15, Forum (Rabo Studio)

### Plenary Lecture IV & Poster Parade

From 9:15 to 10:45, Forum (Rabo Studio)

Chaired by: Jun Yue & Jingxiu Xie

**9:15** **[PL04] Title:** ISPT's long term program process technology
**Presenter:** Sascha Kersten (University of Twente)

**10:00** **Poster parade**

### Coffee Break

From 10:45 to 11:15, Forum (Ground floor)

### Parallel Session 3.1 Process System Engineering

From 11:15 to 12:30, Forum (NOK)

Chaired by: Mar Pérez-Fortes

**11:15** **[KL05] Title:** Process Systems Engineering perspectives and new horizons
**Presenter:** Anton A. Kiss (Delft University of Technology)

**11:45** **[OP33] Title:** Systematic evaluation and optimization of low-carbon technologies for Colombian oil refineries' decarbonization
**Presenter:** Erik López Basto (Delft University of Technology, Ecopetrol S.A.)

**12:00** **[OP34] Title:** Energy and Exergy Analysis of a Coupled Dark Fermentation and Microbial Electrolysis Process for Sustainable Hydrogen Production
**Presenter:** Júlio Cesar de Carvalho Miranda (University of Twente)

**12:15** **[OP35] Title:** Experimental investigation on the hydrodynamics of a conical bubbling fluidized bed with a novel gas distribution system
**Presenter:** Reddy Madhuri Manila (Delft University of Technology)

## Parallel Session 3.2 (Bio)chemical Process Engineering

From 11:15 to 12:30, Forum (Camera 4)

Chaired by: Paolo P. Pescarmona

**11:15** **[OP36] Title:** Photon flux and effective optical path length determination for continuous-flow photoreactor design through radiometry, chemical actinometry and ray-tracing
**Presenter:** Stefan Zondag (University of Amsterdam)

**11:30** **[OP37] Title:** High yielding conversion of xylose to furfural via boronate esters
**Presenter:** Peter J. van der Wal (University of Twente)

**11:45** **[OP38] Title:** Catalytic upgrading Kraft lignin pyrolysis bio-oil: effect of process parameters and sulfur content
**Presenter:** Matteo Borella (University of Genoa, University of Groningen)

**12:00** **[OP39] Title:** Chemical recycling of HDPE and LDPE from municipal waste stream using Hydrothermal Liquefaction process
**Presenter:** Shih-Chieh Chien (University of Amsterdam)

**12:15** **[OP40] Title:** The Interaction of Intrinsic Reaction and Mass Transfer in Polyethylene Pyrolysis with Reflux System
**Presenter:** Dwiputra M. Zairin (University of Twente)

## Parallel Session 3.3 Electrochemical Engineering

From 11:15 to 12:30, Forum (Camera 1)

Chaired by: Ruud Kortlever

**11:15** **[OP41] Title:** Optimizing electrochemical conversion of $CO_2$ to ethylene via multi-physics simulations
**Presenter:** Simone Dussi (TNO)

**11:30** **[OP42] Title:** Regeneration of Iron Powder from Combusted Iron Products by Low-Temperature Electroreduction Method
**Presenter:** Akmal Irfan Majid (Eindhoven University of Technology, Universitas Gadjah Mada)

**11:45** **[OP43] Title:** Salt accumulation in bipolar membranes reduces power in acid-base flow batteries
**Presenter:** Pavel Loktionov (Delft University of Technology)

**12:00** **[OP44] Title:** Electro-separation technologies for sustainable chemical industry: technology ranking and industrial perspectives
**Presenter:** Michele Tedesco (TNO)

## Parallel Session 3.4 Separation Technology & Transport Phenomena

From 11:15 to 12:30, Forum (Rabo Studio)

Chaired by: Kitty Nijmeijer

**11:15** **[OP45] Title:** $CO_2$-Responsive Etalon Membranes (CREM) for in-situ analysis of ocean water
**Presenter:** Georgia Kontaxi (Delft University of Technology)

**11:30** **[OP46] Title:** Development of novel polymeric precursors for the synthesis of selective carbon membranes for gas separation
**Presenter:** Clara Coiana (Eindhoven University of Technology**)**

**11:45** **[OP47] Title:** Electrochemically mediated separation of carbon monoxide
**Presenter:** Christel Koopman (Delft University of Technology)

**12:00** **[OP48] Title:** Advanced downstream processing for recovery of bioalcohols from fermentation broths
**Presenter:** Tamara Janković (Delft University of Technology)

**12:15** **[OP49] Title:** Ferrofluidic millimeter-scale extraction systems for countercurrent slug flow liquid-liquid extraction
**Presenter:** Helda Niawanti (University of Twente)

## Lunch Break & Poster Session

From 12:30 to 13:45, Forum (Ground floor)

## Parallel Session 4.1 Renewable Carbon Conversion

From 13:45 to 15:00, Forum (NOK)

Chaired by: André Heeres

**13:45** **[OP50] Title:** From waste to refinery – turning plastic waste into a suitable feedstock for the production of new materials
**Presenter:** Julian R.J. Strien (University of Groningen)

**14:00** **[OP51] Title:** Induction heating with bulk inductive materials for reverse water gas shift reaction
**Presenter:** Liangyuan Wei (Eindhoven University of Technology)

**14:15** **[OP52] Title:** Chemical recycling of hard to recycle mixed waste plastics
**Presenter:** Matthijs van Akker (BioBTX)

**14:30** **[OP53] Title:** Waste plastic recycling: polypropylene hydrogenolysis over $Ni/Al_2O_3$ catalysts
**Presenter:** Xiyan Huang (University of Groningen)

## Parallel Session 4.2 Reaction and Catalytic Engineering

From 13:45 to 15:00, Forum (Camera 4)

Chaired by: Sascha Kersten

**13:45** **[KL06] Title:** Induction heating and direct Joule heating in intensified chemical processes
**Presenter:** Martin van Sint Annaland (Eindhoven University of Technology)

**14:15** **[OP54] Title:** Batch and Continuous Degradation of Organic Pollutants in Water using Defect-Tuned Nanosized ZnO Photocatalysts
**Presenter:** Shuangxue Li (University of Groningen)

**14:30** **[OP55] Title:** Light-assisted carbon dioxide reduction in an automated photoreactor system coupled to carbonylation chemistry
**Presenter:** Jasper H.A. Schuurmans (University of Amsterdam)

**14:45** **[OP56] Title:** Pore Network Modeling of Hydrodynamics and Solute Dispersion in Packed Bed Reactors
**Presenter:** Ali Fathiganjehlou (Eindhoven University of Technology)

## Parallel Session 4.3 Electrochemical Engineering

From 13:45 to 15:00, Forum (Camera 1)

Chaired by: Thijs de Groot

**13:45** **[OP57] Title:** Hybrid water electrolysis: saving energy for the production of hydrogen
**Presenter:** Dulce M. Morales (University of Groningen)

**14:00** **[OP58] Title:** Evaluating the role of A-site deficiency and exsolution of Ni-Fe nanoparticles in Sr2-xFe1.5-yMo0.5NiyO6±δ electrocatalysts for co-electrolysis of $H_2O$ and $CO_2$
**Presenter:** Roelf Maring (University of Groningen)

**14:15** **[OP59] Title:** Modification of perovskite oxide-based electrodes for efficient $H_2$ production in Protonic Ceramic Electrolyzers
**Presenter:** Nannan Li (University of Groningen)

**14:30** **[OP60] Title:** Integration of in-situ water purification into zero-gap flow cell design for direct seawater electrolysis
**Presenter:** Ai-Yu Liou (Delft University of Technology)

## Parallel Session 4.4 Separation Technology & Transport Phenomena

From 13:45 to 15:00, Forum (Rabo Studio)

Chaired by: Boelo Schuur

**13:45** **[OP61] Title:** Towards Improving Negative $CO_2$ Emission: Optimizing Direct Air Capture Performance
**Presenter:** Amirreza Silani (Delft University of Technology)

**14:00** **[OP62] Title:** Investigation of droplets captured by filter materials at the mesoscale in oil-gas separators
**Presenter:** Weiran Zhang (Eindhoven University of Technology)

**14:15** **[OP63] Title:** Mass Transfer under Liquid-Liquid Slug Flow with Pickering Particles in Microreactors
**Presenter:** Tingting Wang (University of Groningen)

**14:30** **[OP64] Title:** Dry fractionation of cohesive chickpea flour: impact of de-oiling and flow aids
**Presenter:** Koen Wetterauw (Wageningen University and Research)

**14:45** **[OP65] Title:** Learning from Neural Networks: A Strategy to Identify Systematic Improvements to Activity Coefficient Models
**Presenter:** Daniël Emmery (Eindhoven University of Technology)

## Coffee Break

From 15:00 to 15:30, Forum (Ground floor)

## Plenary Lecture V & Awards & Closing Ceremony

From 15:30 to 17:00, Forum (Rabo Studio)

Chaired by: Peter Berben & Jun Yue

**15:30** **Hoogewerff Gold Medal Ceremony**
**[PL05] Title:** Hoogewerff Gold Medal Lecture - Food Process Engineering, Engineering for Sustainability and Health
**Presenter:** Remko Boom (Wageningen University and Research)

**16:30** **Awards & Closing Ceremony**

## Tuesday 8th of October 2024

### Poster Parade

From 16:00 to 17:00, Forum (Rabo Studio)

**16:00**

**[PP01] Title:** Accurate 2D & 3D Simulations of Eddy Currents for Targeted Heating via Induction Heating
**Presenter:** Frederik Nijkamp (Eindhoven University of Technology)

**[PP03] Title:** Selectivity control between Reverse Water-Gas Shift and Fischer-Tropsch Synthesis in Carbon-supported Iron-based Catalysts for $CO_2$ Hydrogenation
**Presenter:** Weixin Meng (University of Groningen)

**[PP05] Title:** Investigating deactivation and kinetics of levulinic acid hydrogenation on titania supported ruthenium catalysts
**Presenter:** Adarsh Patil (Eindhoven University of Technology)

**[PP07] Title:** Investing energy in hydrogen – accelerating applications of decentralised hydrogen
**Presenter:** Hans Gelten (Saxion University of Applied Science)

~~**[PP09] Title:** Pyrolytic Decomposition of Methane to Hydrogen and Functional Solid Carbon: Multi-Scale Modeling and Reactor Development~~
~~**Presenter:** David Reus (Eindhoven University of Technology)~~

**[PP11] Title:** Combined catalytic dehydrochlorination and pyrolysis for PVC waste stream
**Presenter:** Giulia Boccaccini (University of Groningen)

**[PP13] Title:** Modelling Aromatization in a Fluidized Bed Reactor
**Presenter:** Thirza Kuipers (Eindhoven University of Technology)

**[PP15] Title:** Aramazing – Chemical Recycling of Aramid Materials
**Presenter:** Dan Cristian Codita (University of Twente)

**[PP17] Title:** Process simulation of stepwise pyrolysis of cashew nut shell via Aspen Plus
**Presenter:** Chenyu Zhou (Eindhoven University of Technology)

**[PP19] Title:** A Closed Carbon Cycle Approach for Full Valorization of Lignocellulosic Biomass
**Presenter:** Amponsah P. Appiah (University of Groningen)

**[PP21] Title:** Minimizing ohmic resistance in alkaline water electrolyzers
**Presenter:** Saksham Pandey (Eindhoven University of Technology)

**[PP23] Title:** Electrochemical flow modelling of a semi-solid flow battery
**Presenter:** Simone Dussi (TNO)

~~**[PP25] Title:** Steady-state and dynamic modeling of a $CO_2$ electrolyzer: membrane electrode assembly~~
~~**Presenter:** Nasim Heydari (Delft University of Technology)~~

**[PP27] Title:** Gas holdup optimization in zero-gap alkaline water electrolysis via multiphase modelling
**Presenter:** Douwe Orij (Eindhoven University of Technology)

**[PP29] Title:** Alkaline water electrolysis beyond 3 A/cm$^2$
**Presenter:** Maximilian Demnitz (Eindhoven University of Technology)

**[PP31] Title:** Non-noble metal electrocatalysts for Hydrogen Evolution Reaction in PEM Water Electrolysis
**Presenter:** Bhavesh Chavan (Delft University of Technology)

**[PP33] Title:** Closed-Loop Recyclable Lignin-based Triboelectric Nanogenerators
**Presenter:** Yiwei Fan (University of Groningen)

**[PP35] Title:** Multifunctional Hydrogels for Underwater Motion Detection and Information Transmission
**Presenter:** Zeyu Zhang (University of Groningen)

**[PP37] Title:** Inverse gas chromatography, a new technique to investigate surfaces for porous media applications
**Presenter:** Maja Rücker (Eindhoven University of Technology)

**[PP39] Title:** Hydrogenation of bio-derived aldehydes over N-doped C-supported cobalt catalysts
**Presenter:** Ting Wang (University of Groningen)

**[PP41] Title:** Cs-enhanced Ru-based catalysts for low-temperature ammonia decomposition
**Presenter:** Gaetano Anello (Eindhoven University of Technology)

**[PP43] Title:** Methodology for Bubble Formation and Characterization in Viscous Media for Chemical Reactions
**Presenter:** Shivan Bissesar (University of Twente)

**[PP45] Title:** Isolation of anacardic acid from natural cashew nutshell liquid using ion exchange resins.
**Presenter:** Qian Zhou (Eindhoven University of Technology)

**[PP47] Title:** Electrical drying of biomass by electro-osmosis and electrohydrodynamic drying: effect of internal transport phenomena
**Presenter:** Aza Alawi (Delft University of Technology)

**[PP49] Title:** Thin-film-composite anion exchange membranes for increased OH-selectivity in CO2-electrolysis
**Presenter:** Max Seling (Delft University of Technology)

**[PP51] Title:** Investigating the performance of commercially available nanofiltration membranes in alcohol-water mixtures at high pH
**Presenter:** Francisco Caparros-Salvador (University of Twente)

**[PP53] Title:** Numerical Investigation of bubble size effect on the gas hold-up in a constant gas flow rate
**Presenter:** Mehrshad Rezadoost Dezfuli (Eindhoven University of Technology)

**[PP55] Title:** Development and Validation of an In-House CFD Code for Slurry Bubble Columns
**Presenter:** Sriram Ramanathan (Eindhoven University of Technology)

**[PP57] Title:** Energy and Exergy Analysis of a Coupled Dark Fermentation and Microbial Electrolysis Process for Sustainable Hydrogen Production
**Presenter:** Júlio Cesar de Carvalho Miranda (University of Twente)

**[PP59] Title:** Resin beads as metal-free catalysts for the synthesis of cyclic carbonates
**Presenter:** Jing Chen (University of Groningen)

## Wednesday 9th of October 2024

## Poster Parade

From 10:00 to 10:45, Forum (Rabo Studio)

**10:00**

**[PP02] Title:** Modelling framework for Direct Air Capture process: Investigating $CO_2$-$H_2O$ co-adsorption on amine functionalized sorbents
**Presenter:** Mattia Galanti (Eindhoven University of Technology)

**[PP04] Title:** Syngas Production by Plasma-Assisted Decomposition of $KHCO_3$ in an Integrated Carbon Capture and Utilization Process
**Presenter:** Huub van den Bogaard (University of Groningen)

**[PP06] Title:** Methanol synthesis from $CO_2$ using a co-precipitated ZnO/$ZrO_2$ catalyst in a continuous spinning basket reactor
**Presenter:** Mochamad Firmansyah (University of Groningen)

**[PP08] Title:** The Utilization of Humin Ozonolysis Product via Bioconversion using Oleaginous Yeast
**Presenter:** Khairul Hadi Burhan (University of Groningen)

**[PP10] Title:** Taking off with Furfural: The missing link in the production of high performance jet fuel
**Presenter:** Rick Baldenhofer (University of Twente)

**[PP12] Title:** Coupling Mild Flow-through Organosolv Extraction and Catalytic Oxidation from Lignocellulosic Biomass with High S-type Units towards Benzoquinones
**Presenter:** Ge Guo (University of Groningen)

**[PP14] Title:** 1D model of droplet drying using interface receding approach
**Presenter:** Sanaz Aghaei (Eindhoven University of Technology)

**[PP16] Title:** Cooperative integration of thermal solar and wind energy with molten salts and green ammonia enables sustainable power generation in Morocco
**Presenter:** Yori Foppen (University of Twente)

**[PP18] Title:** Techno-economic analysis of circular plastic production using induction heating
**Presenter:** Melany Gomez Arciniegas (Eindhoven University of Technology)

**[PP20] Title:** Mitigating Hydrogen Crossover in Alkaline Water Electrolysis (AWE)
**Presenter:** Jelle Prinsen (Eindhoven University of Technology)

**[PP22] Title:** PyDOLPHYN: Dynamic modelling for optimal system integration of water electrolysis
**Presenter:** Simone Dussi (TNO)

**[PP24] Title:** Indirect $CO_2$ capture: extracting $CO_2$ from concentrated seawater using bipolar membrane electrodialysis
**Presenter:** Vojtech Konderla (Delft University of Technology)

**[PP26] Title:** Scalable fabrication of catalysts for proton exchange membrane water electrolysis
**Presenter:** Bhavesh Chavan (Delft University of Technology)

**[PP28] Title:** Nanostructuring Ni-based porous transport layers for anion exchange membrane water electrolysis
**Presenter:** Ameya Ranade (DIFFER)

**[PP30] Title:** Atomic Layer Deposition for Proton-Exchange Membrane Water Electrolysis
**Presenter:** Athina Tzavara Roussi (Delft University of Technology)

**[PP32] Title:** Gravity-Fed Laminar Electrolyser
**Presenter:** Vincent Botond Polet (Delft University of Technology)

**[PP34] Title:** Unentangling PVC recycling: Challenges, Gaps, and Perspective
**Presenter:** Martijn Meijer (University of Groningen)

**[PP36] Title:** Design and development of bio-based amphiphilic polymers with antibacterial properties
**Presenter:** Zao Cheng (University of Groningen)

**[PP38] Title:** Experimental characterization of co-adsorption kinetics and thermodynamics in solid sorbents for DAC
**Presenter:** Timothy van Lanen (Eindhoven University of Technology)

**[PP40] Title:** Effect of molecular weight on transport limitation in Plastic Hydrogenolysis
**Presenter:** Preethi Venugopal (University of Twente)

**[PP42] Title:** Catalytic conversion of lower olefins to BTX range of aromatics using zeolite-based catalysts
**Presenter:** Paresh Butolia (University of Groningen)

**[PP44] Title:** Electrodialysis Based Membrane Assisted Electro-Osmotic Dewatering of Biomass
**Presenter:** Selvaraj Chinnathambi (University of Groningen)

**[PP46] Title:** Modelling $CO_2$ adsorption for Direct Air Capture using Multiphysics CFD
**Presenter:** Sebastiaan Kuipers (Delft University of Technology)

**[PP48] Title:** Development of porous carbon materials for methane capture from diluted streams
**Presenter:** Giulia De Felice (Eindhoven University of Technology)

**[PP50] Title:** Bio-based Solvents for Circular Poly Vinyl Chloride Processing
**Presenter:** Farzaneh Ghazizadeh Ahsaie (University of Twente)

**[PP52] Title:** Design and scale-up of membrane reactor for ammonia synthesis
**Presenter:** Iolanda Gargiulo (Eindhoven University of Technology)

**[PP54] Title:** Eulerian-Lagrangian Simulation of Bubble-Liquid Interphase Mass Transfer in a Slurry Bubble Column
**Presenter:** Majid Mansouri Borujeni (Eindhoven University of Technology)

**[PP56] Title:** A Simplified Analytical Model for the Impurity Heating Hypothesis of Laser-Induced Crystal Nucleation
**Presenter:** Pepijn van Tooren (Delft University of Technology)

**[PP58] Title:** Design of a separation system for the closed-loop superheated steam drying process in the paper industry
**Presenter:** Felipe Oliveira (University of Twente)

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## *Contact*

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