

## Hydrogen Research Forum and Summer School for PhD students 8-10 August 2023

### Basic concept

Each student will submit an abstract for a poster and/or an oral presentation. The selected students will present a poster in the Tuesday poster session or give an oral presentation in the Thursday seminar. Other students will prepare questions related to the projects presented based on the oral presentation for a 20 min discussion in the seminar sessions. The best posters and best oral presentations will be acknowledged in the closing session.

### Location and venue

LUT University is located at the address Yliopistonkatu 34. For reaching the university by bus, please refer to the bus scheduling tool here: <https://lappeenranta.digitransit.fi/>. The rooms for the different seminar events are listed respectively in the programme below. They can be reached with the help of the LUT rooms map: <https://elut.lut.fi/sites/default/files/category-page/2021-11/salikartta21.pdf>.

Locations for the evening events are listed within the programme.

### Programme

#### Tuesday 8 August 2023

09.00-14.20 Hydrogen Research Forum seminar @ room 2310

14.40-16.45 Poster session @ room "Galleria-aula"

18.30-22.00 Get together with sauna @ LUT rantasauna (location on Google Maps: <https://goo.gl/maps/f8M2RBhcR5e2U67c6>)

#### Wednesday 9 August 2023

09.00-09.15 Opening @ room 2310

09.15-11.30 Lectures @ room 2310

- Hydrogen production
  - Water electrolysis Pertti Kauranen (LUT)
  - Thermo catalytic Ulla Lassi (OU)
  - Solar hydrogen Wei Cao (OU)
- Hydrogen as a part of the energy system Erkki Härö (Sweco)

11.30-12.15 Lunch

12.15-14.00 Outdoor activity (start @ room 3310)

14.00-17.00 Laboratory work (start @ room 3310)

18.30-22.00 Get together activities @ Pumpuhuone (location on Google Maps: <https://goo.gl/maps/kNi1AetDAU8PKbLUA>)

Thursday 10 August 2023

09.00-11.15 Lectures @ room 2310

- Safety Pertti Kauranen (LUT)
- End uses
  - Power-to-X Tuomas Koironen (LUT)
  - Green Steel Ville-Valtteri Visuri (OU)
  - Both2nia Minna Näsman

11.15-12.30 Lunch

12.30-15:30 PhD seminar @ room 2310

- Oral student presentations and discussion

16.00-16.30 Closing session @ room 2310

## Poster titles

Altti Meriläinen	Power balance control and dimensioning of a hybrid off-grid energy system for a Nordic climate townhouse
Anafi Aini	Safe Operation of Alkaline Water Electrolyzer Plant
Aneesh Vasudev	Effects of H <sub>2</sub> admixture on RCCI combustion dual-fuel marine engines: A model-based study
Antti Marttinen	Photocatalytic production of green hydrogen from water using metal-organic frameworks
Babak Arjmand	Hydrogen Rich Gas production Through Supercritical Water Gasification of Biomass
Hassan Sayed Ahmed	Dynamic operation of proton exchange membrane electrolyzers for affordable green hydrogen - a Critical Review
Hossein Enayatzadeh	Hydrogen
Hui Yao	Methanol as a co-substrate with carbon dioxide enhances the butyrate production in microbial electrosynthesis
Isa Banagar	Navigating Hydrogen-Powered Vehicles: A Model-Based Systems Engineering Approach
Jaakko Hyypiä	Optimization of e-methanol production costs based on historical price and weather data
Jeyoung Kim	Air Management System for PFI and DI type Hydrogen Combustion Engines
Kati Asikainen	Tuning the electronic properties of two-dimensional lepidocrocite-type titanium dioxide based heterojunctions
Mousumi Dey	Development of positively charged stable redox couple for redox dual-flow batteries
Muhammad Asim Sarwar	A CFD parametric study for the optimized catalyst layer's thickness and porosity based on the performance of a zero-gap alkaline water electrolyzer (AWE) cell
QiuJun Li	Novel Redox-active Metal Complexes for Hydrogen Production with Flow Batteries
Rubab Zahra	Intermediate temperature separator materials for alkaline water electrolysis
Simo Pekkinen	Comparison of Storage Systems for Renewable Hydrogen
Timo Ristiluoma	Computational modeling of metal hydride materials for hydrogen storage
Sadegh Mehranfar	Hydrogen as a key role for the energy transformation

## Oral presentations

Ali Tuna	Photo-hydrogen Production in Monophasic Systems
Jeyoung Kim	Air Management System for PFI and DI type Hydrogen Combustion Engines
Pietari Puranen	Influence of the impedance of a PEM water electrolyzer cell on its power consumption under impaired power quality
Rami Alfasfos	Learned lessons and recommendations from analysis of hydrogen accidents and incidents

## Accommodation with discounts for summer school guests:

### Scandic Patria

- A discount can be claimed with code “BLES070823”. Either use the link <http://www.scandichotels.fi/?bookingcode=BLES070823> or contact the hotel by phone or e-mail and mention the code. Prices: 105€/night for a single person room and 125€/night for a two-person room. No fixed quota available; availability not guaranteed.

### Hotel Rakuuna

- A limited number of rooms available for a cheaper price with code “LES summer school”. Reservation should be done by contacting the hotel directly either by phone or e-mail. Prices: 120 €/room/night for one person, and 132€/room/night for two people in total. 13 *twin* rooms and 12 *double* rooms available in the quota.