

# Session Program for Process Engineering

Dates: 6<sup>th</sup>, 7<sup>th</sup> October, 2018

Place: Hurtigruta Finnmarken

## Saturday 6<sup>th</sup> October

### **09:00 ~ 10:20 Oral Session I: High Performance Energy Technology**

Room: Ulrikken

Chairs: Kuniko Urashima and Armin Hafner

09:00 ~ 09:20 *Development of High Temperature Heat Pump Systems using Natural Refrigerants*

K Hattori and H Fuchigami

09:20 ~ 09:40 *High temperature heat pumps in industry using natural refrigerants*

Petter Nekså, Michael Bantle, Christian Schlemminger, Opeyemi Bamigbetan

09:40 ~ 10:00 *Basic Characteristics of CO<sub>2</sub> Dry Ice Cyclone Separator*

Kensaku Fukushige, Haruhiko Yamasaki, Hiroshi Yamaguchi, Petter Nekså

10:00 ~ 10:20 *Experimental Investigation of a R290 Heat Pump Drum Dryer*

Trygve M. Eikevik, Espen Storslett, Ignat Tolstorebrov

### **10:20 ~ 10:40 Coffee Break**

### **10:40 ~ 12:00 Oral Session II: Membranes for Sustainable Energy Technology**

Room: Ulrikken

Chairs: Izumi Kumakiri and Xuezhong He

10:40 ~ 11:00 *Micro-porous inorganic membranes - their unique dehydration properties and potential applications*

Izumi Kumakiri, Mamoru Yamada, Javier Herguido and Miguel Menendez

11:00 ~ 11:20 *Thiol-ene-epoxy homo-polymerized PEG-based membranes for CO<sub>2</sub> separation*

Jing Deng, Zhongde Dai, Marius Sandru, Liyuan Deng

11:20 ~ 11:40 *Cellulose-based carbon hollow fiber membranes for CO<sub>2</sub> removal from natural gas*

Linfeng Lei, Arne Lindbråthen, Magne Hillestad and Xuezhong He

11:40 ~ 12:00 *Composite membranes for oxygen and hydrogen separation in CCS*

Zuoan Li, Wen Xing, Jonathan M. Polfus, Christelle Denonville, Marie-Laure Fontaine and Rune Bredesen

**12:30 ~ 13:30      Lunch**

**13:30 ~ 14:50      Oral Session III: Energy Conversion and Harvesting**

Room:    Ulrikken

Chairs:   Haruhiko Yamasaki and Trygve M. Eikevik

13:30 ~ 13:50      *Carbon membranes for biogas upgrading: techno-economic feasibility analysis*  
Xuezhong He, Yunhan Chu, Arne Lindbråthen, Magne Hillestad, and May-Britt Hägg

13:50 ~ 14:10      *Application of Magnetic Nanofluids for Hydrogen Production*  
Yuhiro Iwamoto, Kotaro Chimura, Hitoshi Miyao, Yasushi Ido, and Shigeru Takagi

14:10 ~ 14:30      *Introduction of in-Market Ferrofluid Applications and the Activities for Relief of Global Energy Consumption*

Yasutake Hirota

14:30 ~ 14:50      *State-of-the-art Kinetic Energy Harvesting using Permanent Magnet Elastomer*

Yasushi Ido, Yuhiro Iwamoto, Keisuke Sato, Tomoe Deguchi, Yasuhisa Fujii, Hiroshi Yamaguchi

## **Sunday 7<sup>th</sup> October**

**10:00 ~ 12:10      Oral Session IV: Energy Utilisation and Transport**

Room:    Ulrikken

Chairs:   Yuhiro Iwamoto and Petter Nekså

10:00 ~ 10:20      *Development of Magnetically Driven Energy Transport Device*  
Hiroshi Yamaguchi, Haruhiko Yamasaki and Takeshi Bessho

10:20 ~ 10:40      *Power production from variable-load industrial surplus heat: Modelling and optimizing system design and performance*

Monika Nikolaisen, Trond Andresen

10:40 ~ 11:10      Coffee break

11:10 ~ 11:30      *Value chain analysis of long-distance hydrogen transport*  
Yuki Ishimoto, Mari Voldsund, David Berstad, Simon Roussanly, Stefania Gardarsdottir, Petter Nekså, Shigeki Iida

11:30 ~ 11:50      *Energy trends in Nordic hotels and state-of-the-art solutions*  
Silje Smitt, Armin Hafner

11:50 ~ 12:10      *Role of industry clusters for improving energy efficiency*  
Ingrid C Claussen, Jens O.D. Røyrvik and Petter Nekså

**12:30 ~ 13:30      Lunch**

**13:30 ~15:55      Oral Session V: Energy Storage and Transport Phenomena**

Room:    Ulrikken

Chairs:   Hiroshi Yamaguchi and Ingrid C. Claussen

13:30 ~ 13:50      *Evaluation of different concepts for cold utilization from regasification of LNG*

Armin Hafner, Tone Øverby, Ángel Álvarez Pardiñas

13:50 ~ 14:10      *Experimental investigation of propane (R290) evaporation in small pipes*

Eshan Allymehr, Trygve Magne Eikevik, Armin Hafner

14:10 ~ 14:30      *An Experimental Study on Heat Transfer of Dry-ice Sublimation in Refrigeration System*

Haruhiko Yamasaki, Hiroshi Yamaguchi, Kazuyuki Hattori, Takeshi Kamimura, Petter Nekså

14:30 ~ 14:50      *Thermal storage for improved utilization of industrial waste heat*

Hanne Kauko, Håkon Selvnes, Brage R. Knudsen, Armin Hafner and Petter Nekså

14:50 ~ 15:15      Break

15:15 ~ 15:35      *Strategies for snow storage in Norway*

Ignat Tolstorebrov, Trygve Eikevik, Marianne Heimdal

15:35 ~ 15:55      *Cold thermal energy storage using CO<sub>2</sub> as refrigerant*

Håkon Selvnes, Armin Hafner

**15:55 ~ 16:45      Free Discussion**