

Session Program for Process Engineering

Dates: 6th, 7th March 2020

Friday 6th March

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

Chairs: Peter Neksa and Hiroshi Yamaguchi

- 09:00 ~ 09:20 Separation phenomenon of frost on a cooling surface using sublimation under low temperature forced convection
Masashi Kato, Sho Matsushita, Kosaku Nishida, Kazuhiro Hattori, Hidetoshi Ohkubo
- 09:20 ~ 09:40 Investigation on screw compressor models for combined absorption-compression heat pumps at high temperature operation
Marcel Ulrich Ahrens, Even Kristian Tønsgberg, Ignat Tolstorebrov, Armin Hafner, Trygve Magne Eikevik
- 09:40 ~ 10:00 Experimental performance testing of a novel plates-in-tank cold thermal energy storage unit for CO₂ refrigeration
Håkon Selvnes, Armin Hafner
- 10:00 ~ 10:20 R744 ejector design optimization
Knut Emil Ringstad, Armin Hafner

10:20 ~ 10:40 Coffee Break

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

Chairs: Izumi Kumakiri and Haruhiko Yamasaki

- 10:40 ~ 11:00 Development of composite carbon membranes for gas separations
Izumi Kumakiri, Kyosuke Tamura, Kazuhiro Tanaka, Hidetoshi Kita, Xuezhong He
- 11:00 ~ 11:20 Development of novel membranes consisting of ionic liquids and metal-organic frameworks for carbon dioxide capture processes
Paloma Ortiz-Albo, Carla Martins, Tiago Ferreira, Isabel Esteves, Luis Cunha e Silva, Hiromitsu Takaba, Joao Crespo, Izumi Kumakiri, Luisa Neves
- 11:20 ~ 11:40 Influence of Ag-doping on the photocatalytic activity of TiO₂ membranes in water cleaning

11:40 ~ 12:00	Azzah Nazihah Che Abdul Rahim, Haruki Bonkohara, Izumi Kumakiri Adsorbed carbon dioxide dissociation to carbon monoxide using argon and helium nonthermal plasma flows Haruhiko Yamasaki, Tomoyuki Kuroki, Masaaki Okubo
12:00 ~ 13:30	Lunch
13:30 ~ 14:50	Oral Session III: Energy Utilisation and Transport
	Chairs: Kazuhiro Hattori and Takuya Kuwahara
13:30 ~ 13:50	Solutions for informed and demanding end users applying natural working fluids Armin Hafner
13:50 ~ 14:10	LHC detectors refrigeration system using CO ₂ - a system description Stefanie Blust, Armin Hafner, Ángel Á. Pardiñas, Bart Verlaat, Pierre Hanf
14:10 ~ 14:30	Value chain analysis of long-distance hydrogen transport with various technology options Yuki Ishimoto, Mari Voldsund, David Berstad, Simon Roussanaly, Stefania Gardarsdottir, Petter Neksa, Shigeki Iida
14:30 ~ 14:50	Analysis and modelling of an integrated R744 unit for hotels Silje Marie Smitt, Armin Hafner
14:50 ~ 15:10	Coffee Break
15:10 ~ 16:30	Oral Session IV: Smart Fluids for Energy and Environment
	Chairs: Yuhiro Iwamoto and Yasutake Hirota
15:10 ~ 15:30	Introduction of the latest ferrofluids and market applications for environmental load relief in various industries Yasutake Hirota
15:30 ~ 15:50	Fundamental Characteristics of Ionic Liquid Electrospray and Its Application to CO ₂ Absorption Hidemasa Takana, Nozomi Hara
15:50 ~ 16:10	Magnetically-driven heat transport device using temperature-sensitive magnetic fluids Yuhiro Iwamoto, Keita Odai, Genta Ichinose, Yasushi Ido
16:10 ~ 16:30	Tunable anisotropic thermal conductivity of Ag nanowire dispersed-magnetic fluids Kosuke Nomura, Keisuke Sawada, Yuhiro Iwamoto, Yasushi Ido, Jhon Cuya, Balachandran Jeyadevan

Saturday 7th March

09:00 ~ 10:20 Oral Session V: Energy Storage and Transport Phenomena

Chairs: Yuki Ishimoto and Armin Hafner

- 09:00 ~ 09:20 Characteristics of ultra-low temperature CO₂ refrigeration system with cyclone evaporator
Hiroyuki Wakimoto, Koshiro Uchi, Hiroshi Yamaguchi, Haruhiko Yamasaki, Kazuyuki Hattori,
Takeshi Kamimura, Peter Neksa
- 09:20 ~ 09:40 Removal characteristics of diesel particulates using a magnetic fluid and nonthermal plasma
Takuya Kuwahara
- 09:40 ~ 10:00 Modelica-based modeling of CO₂ and propane heat pump systems for space heating and
domestic hot water production
Alireza Zendehboudi, Ángel Álvarez Pardiñas, Armin Hafner
- 10:00 ~ 10:20 Effect of enhanced geometry on evaporation of Propane (R-290) in small diameter tubes
Ehsan Allymehr, Trygve Magne Eikevik, Armin Hafner
- 10:20 ~ 12:00 Free discussion**