**KIFEE Symposium**
**Trondheim, Norway - September 22-23, 2015**
**Session Program for Process Engineering**

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| **Monday September 21st (Auditorium EL-6, Electro building) Session 3** | |
| 16:40-17:00 | *Overview for Target Sessions/workshops. Chairs: S. Itonori and M-A. Einarsrud* |
| | • Electrolysis Systems and Advanced Inorganic Materials<br>• Process Engineering - Hiroshi Yamaguchi and Petter Nekså<br>• Advanced Biological Materials<br>• Education |
| **Tuesday September 22nd (Meeting room 520/521, 5th floor, Kolbjørn Hejes vei 1D)** | |
| ***Chairs: Izumi Kumakiri and Petter Nekså*** | |
| 09:00-09:25 | ***Hiroshi Yamaguchi (Doshisha Univ.), Yuhiro Iwamoto (Doshisha Univ.), Haruhiko Yamasaki (Doshisha Univ.), Chayadit Pumaneratkul (Doshisha Univ.)***<br>New Development of Supercritical $CO_2$ Solar Rankine Cycle System: Hybrid System |
| 09:25-09:50 | ***Trygve M. Eikevik (NTNU)***<br>Propane assisted $CO_2$ refrigeration system for hot ambient conditions |
| 09:50-10:15 | ***K Hattori (Mayekawa MFG. CO., LTD.), S Fukano (Mayekawa MFG. CO., LTD.), H Fuchigami (Mayekawa MFG. CO., LTD.), N Mugabi (Mayekawa MFG. CO., LTD.)***<br>Applications of High Temperature Heat Pump Systems using Natural Refrigerants |
| **10:15-10:30** | **Short coffee break** |
| 10:30-10:55 | ***May-Britt Hägg (NTNU)***<br>The art of going from small to larger pilots for new membrane process technology |
| 10:55-11:20 | ***Izumi Kumakiri (Yamaguchi Univ.), Kazuhiro Tanaka (Yamaguchi Univ.), Hidetoshi Kita (Yamaguchi Univ.)***<br>Current status of zeolite membranes and their potential applications |
| 11:20-11:45 | ***Liyuan Deng (NTNU)***<br>Mimic enzyme promoted transport membrane for CO2 separation |
| **11:45-13:00** | **LUNCH** |
| ***Chairs: Hiroshi Yamaguchi and May-Britt Hägg*** | |
| 13:00-13:25 | ***Jo Kishimoto (Doshisha Univ.), Yuhiro Iwamoto (Doshisha Univ.), Haruhiko Yamasaki (Doshisha Univ.), Hiroshi Yamaguchi (Doshisha Univ.)***<br>Application of magnetic nanofluids for cooling devices |
| 13:25-13:50 | ***Halvor Lund (SINTEF), Eskil Aursand (SINTEF)***<br>Status and results of the NanoHX project |
| 13:50-14:15 | ***Ryohei Yokoyama (Osaka Prefecture Univ.)***<br>Optimal Operation of a $CO_2$ Heat Pump Water Heating System |
| 14:15-14:40 | ***Ignat Tolstorebrov (NTNU)***<br>Compression-absorption heat pump system for high temperature lifts |

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| **14:40-15:00** | **Coffee break** |
| 15:00-15:25 | ***Steffen Møller-Holst (SINTEF)***<br>Large scale export of hydrogen from Norway to Japan - Results from a recent feasibility study |
| 15:25-15:50 | ***Petter Nekså (SINTEF), David Berstad (SINTEF)***<br>Sites and concepts for possible hydrogen production and export from Norway |
| 15:50-16:15 | ***Syouichi Aida (Yamaguchi Univ.), Izumi Kumakiri (Yamaguchi Univ.), Kazuhiro Tanaka (Yamaguchi Univ.), Hidetoshi Kita (Yamaguchi Univ.)***<br>Mixed matrix membranes for gas separations (tentative) |
| 16:15-16:40 | ***Maria Teresa Guzman Gutierrez (NTNU)***<br>The concept of using an osmotic membrane pressure actuator (OMPA) for EOR |
| 16:40-17:05 | ***Yoshihiro Kajimura (Yamaguchi Univ.), Izumi Kumakiri (Yamaguchi Univ.), Kazuhiro Tanaka (Yamaguchi Univ.), Hidetoshi Kita (Yamaguchi Univ.)***<br>Gas permeation properties of zeolite membranes (tentative) |
| 16:00–18:00 | Poster session - (all workshops, Nano-vrimle between Chemistry buildings I and II) |
| **Wednesday September 23rd (Meeting room 520/521, Kolbjørn Hejes vei 1D)** | |
| **Chairs: Yuhiro Iwamoto and Trygve Eikevik** | |
| 09:00-09:25 | ***Yuhiro Iwamoto (Doshisha Univ.), Akihito Ikeuchi (Doshisha Univ.), Haruhiko Yamasaki (Doshisha Univ.), Hiroshi Yamaguchi (Doshisha Univ.)***<br>Heat Recovery Efficiency of Evacuated Solar Collector using Supercritical $CO_2$ |
| 09:25-09:50 | ***Armin Hafner (SINTEF), Petter Nekså (SINTEF)***<br>Use of ejectors as means to obtain efficiency improvements for $CO_2$ systems at high ambient temperatures |
| 09:50-10:15 | ***Chayadit Pumaneratkul (Doshisha Univ.), Yuhiro Iwamoto (Doshisha Univ.), Haruhiko Yamasaki (Doshisha Univ.), Hiroshi Yamaguchi (Doshisha Univ.)***<br>Progress of Supercritical $CO_2$ Solar Rankine Cycle System with Thermally Driven Pump |
| **10:15-10:30** | **Short coffee break** |
| 10:30-10:55 | ***Michael Bantle (SINTEF)***<br>High temperature steam heat pumps for drying applications |
| 10:55-11:45 | • Discussion<br>• Poster tour or lab tour |
| **11:45-13:00** | **LUNCH** |