

Session table

Wednesday, October 14		Thursday, October 15		Friday, October 16			
8:00-	Registration	8:00-	Registration	8:00-	Registration		
9:00-9:15	Opening	8:30-9:10	PL2	8:30-9:00	OR5-01 (Invited)		
9:15-9:55	PL1	9:10-9:30		Break	9:00-9:15	OR5-02	
9:55-10:15	Break	9:30-10:40	Poster Session 1	9:15-9:30	OR5-03		
10:15-10:45	OR1-01 (Invited)			9:30-9:50	Break	9:50-11:00	Poster Session 2
10:45-11:15	OR1-02 (Invited)	10:40-11:10	OR4-01 (Invited)	11:00-11:15	OR6-01		
11:15-11:30	OR1-03	11:10-11:40	OR4-02 (Invited)	11:15-11:30	OR6-02		
11:30-11:45	OR1-04			11:30-11:45	OR6-03		
11:45-12:00	OR1-05	11:40-11:55	OR4-03	11:45-12:00	OR6-04		
12:00-13:30	Lunch	11:55-12:10	OR4-04	12:00-13:30	Lunch		
		12:10-12:25	OR4-05				
		12:25-12:40	OR4-06				
		12:45-19:00	Excursion			12:45-19:00	Excursion
13:30-14:00	OR2-01 (Invited)			13:30-14:00	OR7-01 (Invited)		
14:00-14:15	OR2-02			14:00-14:30	OR7-02 (Invited)		
14:15-14:30	OR2-03			14:30-14:45	OR7-03		
14:30-14:45	OR2-04			14:45-15:00	OR7-04		
14:45-15:00	OR2-05			15:00-15:15	OR7-05		
15:00-15:15	OR2-06			15:15-15:30	OR7-06		
15:15-15:35	Break			15:30-15:55	Break		
15:35-16:05	OR3-01 (Invited)			15:55-16:50	Discussion		
16:05-16:20	OR3-02						
16:20-16:35	OR3-03						
16:35-16:50	OR3-04						
16:50-17:05	OR3-05	16:50-17:00	Closing				
17:05-17:20	OR3-06	19:00-21:00	Banquet				
17:30-19:30	Welcome Reception						

Opening, Plenary Session, Oral Session, Discussion, Closing: Small Hall

Welcome Reception, Poster Session, Break: Multi-purpose Hall

Wednesday, October 14, 2015

Opening, 9:00 - 9:15 (Small Hall)

Wednesday Plenary Session, 9:15 - 9:55 (Small Hall)

Session Chair: Yasuharu Kamioka

- PL1 **Cooling system for HTS applications**
Wolfgang Stautner (GE Global Research Center)

Morning Break, 9:55 - 10:15 (Multi-purpose Hall)

Oral Session 1 Wires, Cables and Magnets-1, 10:15 - 12:00 (Small Hall)

Session Chairs: Carlo Ferdeghini and Kenichi Sato

- OR1-01 **[Invited] Development of direct current high T_c superconducting cable for railway system**
Masaru Tomita, Kenji Suzuki Yusuke Fukumoto, Atsushi Ishihara, Tomoyuki Akasaka, Yusuke Kobayashi and Atsushi Maeda (Railway Technical Research Institute)
- OR1-02 **[Invited] Progress of the MgB₂ wire manufacturing through the ex-situ method and of its applications**
Giovanni Grasso, Matteo Tropeano, Davide Nardelli, Silvia Brisigotti, Andrea Tumino and Valeria Cubeda (Columbus Superconductors S.p.A)
- OR1-03 **Critical currents in advanced MgB₂ wires**
Hiroaki Kumakura, Shujun Ye, Akiyoshi Matsumoto and Hiroyuki Takigawa (National Institute for Materials Science)
- OR1-04 **Local I_c variation and its influence on thermal instability in a long length Bi-2223 tape**
Takanobu Kiss, Kohei Higashikawa, Masayoshi Inoue (Kyushu University) and Hitoshi Kitaguchi (National Institute for Materials Science)
- OR1-05 **Bi2223 (DI-BSCCO) magnets for industrial applications**
Eiji Shizuya, Takashi Nishimura, Takahiro Yamaguchi and Takeshi Kato (Sumitomo Electric Industries, Ltd.)

Lunch, 12:00 - 13:30

Oral Session 2 Wires, Cables and Magnets-2, 13:30 - 15:15 (Small Hall)

Session Chairs: Ali Gencer and Hiroyuki Ohsaki

- OR2-01 **[Invited] Liquid nitrogen cooling system for Yokohama HTS cable project**
Michihiko Watanabe (Sumitomo Electric Industries, Ltd.)
- OR2-02 **Flexible HTS power cable cryostats with minimal heat load: the state of the art**
Rainer Soika (Nexans Deutschland GmbH)
- OR2-03 **Testing of conductor-on-round-tube (CORT) cable in a single layer coil**
Fedor Gömöry, Ján Šouc and Michal Vojenčiak (Institute of Electrical Engineering, SAS)

- OR2-04 **Feasibility study of superconducting power cables for DC electric railway feeding systems in view of thermal condition at short circuit accident**
Daisuke Kumagai, Hiroyuki Ohsaki (The University of Tokyo) and Masaru Tomita (Railway Technical Research Institute)
- OR2-05 **AC loss evaluation of an HTS insert for high field magnet cooled by cryocoolers**
Kazuhiro Kajikawa (Kyushu University), Satoshi Awaji and Kazuo Watanabe (Tohoku University)
- OR2-06 **Magnet design with 100-kA HTS STARS conductors for the helical fusion reactor**
Nagato Yanagi (National Institute for Fusion Science), Satoshi Ito (Tohoku University), Yoshiro Terazaki (SOKENDAI), Hitoshi Tamura, Shinji Hamaguchi (National Institute for Fusion Science), Toshiyuki Mito, Hidetoshi Hashizume (Tohoku University) and Akio Sagara (National Institute for Fusion Science)

Afternoon Break, 15:15 - 15:35 (Multi-purpose Hall)

Oral Session 3 Large Scale Applications, 15:35 - 17:20 (Small Hall)

Session Chairs: Masaru Tomita and Taketsune Nakamura

- OR3-01 **[Invited] Cooling system for HTS motors**
Jie Yuan and Peter Winn (American Superconductor)
- OR3-02 **Recent HTS application activity in the world: trend and perspective**
Yutaka Yamada and Tsutomu Watanabe (International Superconductivity Technology Center)
- OR3-03 **Development of REBCO HTS magnet for 10 MW wind turbine generator**
Makoto Furukawa, Shinichi Mukoyama, Toshiaki Amano (Furukawa Electric Co., Ltd.), Hirofumi Yamasaki, Shuichiro Fuchino (National Institute of Advanced Industrial Science & Technology), Akito Machida, Noriharu Tamada (Mayekawa MFG. Co., Ltd.), Satoshi Fukui (Niigata University), Osami Tsukamoto (Sophia University) and Hiroyuki Ohsaki (The University of Tokyo)
- OR3-04 **Development of Superconducting Magnetic Bearing for flywheel energy storage system**
Yoshiki Miyazaki, Katsutoshi Mizuno, Tomohisa Yamashita, Masafumi Ogata, Hitoshi Hasegawa, Ken Nagashima (Railway Technical Research Institute), Shinichi Mukoyama, Taro Matsuoka, Kengo Nakao, Makoto Furukawa (Furukawa Electric Co., Ltd.), Shinichi Horiuchi (Yamanashi Prefectural Public Enterprise Bureau), Tadakazu Maeda (Kubotek Corporation), Hideki Shimizu (Mirapro., Ltd.)
- OR3-05 **Compact and strong magnetic field generators bearing HTS bulk magnets cooled by refrigerators and their practical applications**
Tetsuo Oka, Yasuhiro Takahashi, Hiroshi Watanabe, Jun Ogawa, Satoshi Fukui, Takao Sato, Tomohito Nakano (Niigata University), Kazuya Yokoyama (Ashikaga Institute of Technology) and Takashi Nakamura (RIKEN)
- OR3-06 **Cooling and operation of transformers based on flux-transfer**
Ali Gencer, Janos Kosa, Ekrem Yanmaz, Ercan Ertekin, Sahure Gecer, Serap Safran, Ebru Simsek Kilicarslan and Ahmet Kılıç (Ankara University)

Welcome Reception, 17:30 - 19:30 (Multi-purpose Hall)

Thursday Plenary Session, 8:30 - 9:10 (Small Hall)

Session Chair: Takano Kiss

PL2 **Fundamental aspects of thermal load in HTS and cryogenics**

Mathias Noe (Karlsruhe Institute of Technology)

Morning Break, 9:10 - 9:30 (Multi-purpose Hall)

Poster Session 1, 9:30 - 10:40 (Multi-purpose Hall)

Session Chairs: Sangkwon Jeong and Naoko Nakamura

PO1A - Fundamental Aspects of Heat Load

PO1A-01 **Comparison between RE-123 and Bi-2223 long length tapes from the view point of current transport properties influencing thermal stability**

Takanobu Kiss, Kohei Higashikawa, Masayoshi Inoue, Takumi Suzuki, Kazutaka Imamura, Yuta Onodera, Dai Uetsuhara, Ken Takasaki (Kyushu University), Akira Ibi, Teruo Izumi (ISTEC-SRL) and Hitoshi Kitaguchi (National Institute for Materials Science)

PO1A-02 **AC loss measurement of pancake BSCCO coils**

Serap Safran, Ahmet Kılıç (Ankara University), Jano Souc (Institute of Electrical Engineering, SAS), Ali Gencer (Ankara University) and Fedor Gömöry (Institute of Electrical Engineering, SAS)

PO1B- Large Capacity and High Efficiency Cryocooler

PO1B-01 **Development of a compact cryocooler system for HTS filters application**

Xiaomin Pang (Key Laboratory of Cryogenics, CAS, University of Chinese Academy of Sciences), Xiaotao Wang (Key Laboratory of Cryogenics, CAS), Shuai Chen, Jian Zhu (Lihan Cryogenics Co., Ltd.), Wei Dai, Ercang Luo (Key Laboratory of Cryogenics, CAS)

PO1B-02 **Study on a stirling cryocooler for superconducting motor application**

Xiaotao Wang, Wei Dai, Ke Li (Key Laboratory of Cryogenics, CAS), Jian Zhu, Shuai Chen (Lihan Cryogenics Co., Ltd.) and Ercang Luo (Key Laboratory of Cryogenics, CAS)

PO1B-03 **Cooling system with a stirling cryocooler for a high temperature superconducting motor**

Kenta Yumoto, Kyosuke Nakano, Yoshikatsu Hiratsuka (Sumitomo Heavy Industries, Ltd.), Satoshi Arakawa, Tsuyoshi Shinzato, Hitoshi Oyama and Hironobu Saka (Sumitomo Electric Industries, Ltd.)

PO1B-04 **Development of high efficiency stirling-type cryocooler for superconducting transportation system**

Jun Watanabe, Taketsune Nakamura, Shuhei Iriyama, Naoyuki Amemiya (Kyoto University) and Yoshimasa Ohashi (Aisin Seiki Co., Ltd.)

PO1B-05 **Development of cooling technologies for SMES**

Naoki Hirano, Shigeo Nagaya and Tomonori Watanabe (Chubu Electric Power Co., Inc)

PO1C- Solid and Mixed Cryogen Cooling

- PO1C-01 **Heat exchanger structure of a solid nitrogen heat capacitor cooling high-temperature superconducting magnet**
Manabu Aoki (Hitachi, Ltd.)
- PO1C-02 **Investigation on high gradient magnetic separator using solid nitrogen cooling system**
Seong-Gyeom Kim, Jung-Bin Song, Yoon Hyuck Choi, Tae Hyun Kim and Haigun Lee (Korea University)
- PO1C-03 **A study on cooling and operating performances of GdBCO racetrack coils cooled by mixed cryogen cooling system for high temperature superconducting rotating machines**
Yoon Hyuck Choi, Seong-Gyeom Kim, Dong Gyu Yang, Young-Gyun Kim and Haigun Lee (Korea University)

Oral Session 4 Novel Cooling Structure and Method, 10:40 - 12:40 (Small Hall)

Session Chairs: Fridolin Holdener and Hirokazu Hirai

- OR4-01 **[Invited] Thermal bridge between cryocooler and HTS system**
Sangkwon Jeong (Korea Advanced Institute of Science and Technology)
- OR4-02 **[Invited] Conduction cooling for HTS magnet**
Toru Kuriyama (Toshiba Corporation)
- OR4-03 **Integrated design of cryogenic refrigerator and liquid-nitrogen circulation loop for HTS cable**
Ho-Myung Chang, Ki Nam Ryu (Hong Ik University), Cheonkyu Lee, Sangkwon Jeong (Korea Advanced Institute of Science and Technology) and Hyung Suk Yang (KEPCO Research Institute)
- OR4-04 **Proposal for an actual reduction of heat leak of HTS cable cryogenic system using Liquid Natural Gas (LNG)**
Satarou Yamaguchi, Hirofumi Watanabe, Yury Ivanova, Vladimir Vyatkin and Noriko Chikumoto (Chubu University)
- OR4-05 **Overview on cryogenic refrigeration cycles for large scale HTS applications**
Lutz Decker (Linde Kryotechnik AG)
- OR4-06 **Pressure drop and heat transfer characteristics of two-phase boiling nitrogen in triangular pipe flow**
Katsuhide Ohira (Tohoku University), Hisatoshi Watanabe (Toyo Engineering Corporation), Koji Sugawara, Koichi Takahashi (Tohoku University), Hiroaki Kobayashi, Hideyuki Taguchi (Japan Aerospace Exploration Agency) and Itsuo Aoki (JECC Torisha Co., Ltd.)

Excursion, 12:45 - 19:00

Banquet, 19:00 - 21:00

Oral Session 5 Liquid & Solid Cryogen Production, 8:30 - 9:30 (Small Hall)

Session Chairs: Shuichiro Fuchino and Toru Kuriyama

- OR5-01 **[Invited] Cooling unit for the AmpaCity project - one year successful operation**
Friedhelm Herzog (Messer Group GmbH), Thomas Kutz (Messer Industriegase GmbH), Mark Stemmler (Nexans Deutschland GmbH) and Torsten Kugel (RWE-Westnetz GmbH)
- OR5-02 **Status of development on magnetic refrigerator for hydrogen liquefaction**
Takenori Numazawa (National Institute for Materials Science), Koji Kamiya (Japan Atomic Energy Agency) and Koichi Matsumoto (Kanazawa University)
- OR5-03 **Subcooled-LN₂-bath-cooling system with a Ne turbo-Brayton refrigerator for HTS applications**
Masataka Iwakuma, Kazuhisa Adachi, Kiwook Yun, Seiki Sato, Kohichi Yoshida (Kyushu University), Yoshiaki Suzuki, Takahiro Umeno (Taiyo Nippon Sanso Co.), Masayuki Konno (Fuji Electric Co., Ltd.) and Teruo Izumi (ISTEC)

Morning Break, 9:30 - 9:50 (Multi-purpose Hall)

Poster Session 2, 9:50 - 11:00 (Multi-purpose Hall)

Session Chairs: Tsuyoshi Wakuda and Hiroshi Ueda

PO2A - Cable, Magnet and Current Lead

- PO2A-01 **Cooling processes and current feeding tests on a 200-m DC HTS cable**
Jian Sun (Chubu University) Seiki Miyata (Tamagawa University), Kengo Yamauchi, Yuki Sato, Yudong Zhang, Mohamed Tallouli, Makoto Hamabe, Hirofumi Watanabe, Toshio Kawahara, Noriko Chikumoto, Yury Ivanova and Satarou Yamaguchi (Chubu University)
- PO2A-02 **Optimal current value evaluation test of Peltier current lead with water-cooled jacket**
Kengo Yamauchi, Muneaki Ito, Vladimir S. Vyatkin, Yury V. Ivanov, Hirofumi Watanabe, Seiki Miyata, Noriyuki Inoue and Satarou Yamaguchi (Chubu University)
- PO2A-03 **Pressure change during the quench of superconducting fault current limiting modules in sub-cooled liquid nitrogen**
Heesun Kim, Young Hee Han, Seong-Eun Yang, Seung-Duck Yu, Byung Jun Park, Kijun Park, Jaeun Yoo, and Hye-Rim Kim (Korea Electric Power Corporation (KEPCO) Research Institute)
- PO2A-04 **Investigation of abnormal events on 3T HTS MRI magnet**
Shin-ichi Urayama, Takashi Suzuki (Kyoto University), Hitoshi Kitaguchi (National Institute for Materials Science), Yasuaki Terao, Osamu Ozaki (Kobe Steel, Ltd.), Ken-ichi Sato (Sumitomo Electric Industries, Ltd.) and Hidenao Fukuyama (Kyoto University)
- PO2A-05 **A Study on the Desired Performance of Cryocooler for HTS MRI**
Ryuya Ando, Manabu Aoki, Yukinobu Imamura, and Takeshi Nakayama (Hitachi, Ltd.)
- PO2A-06 **Conduction-cooling structure of a HTS coil winding a non-reinforced bismuth-based superconducting tape**
Akihisa Miyazoe, Manabu Aoki and Ryuya Ando (Hitachi, Ltd.)

- PO2A-07 **Low vibration thermal property measurement system for insulation material used for HTS current lead**

Myung Su Kim and Yeon Suk Choi (Korea Basic Science Institute)

PO2B- Levitation and Rotating Machine

- PO2B-01 **Conductive cooling of YBCO tapes for rotational pinning levitation**

Masanori Tsuchimoto (Hokkaido University of Science)

- PO2B-02 **Fabrication of the conduction cooling HTS levitation coil using heat pipes**

Akifumi Kawagoe (Kagoshima University), Tomoya Osako, Toshiyuki Miho (National Institute for Fusion Science), Nagato Yanagi and Naoki Hirano (National Institute for Fusion Science, Chube Electric Power Co., Inc.)

- PO2B-03 **Development of a cooling-system for superconducting wind turbine**

Shuichiro Fuchino, Mitsuho Furuse, Makoto Okano and Naotake Natori (National Institute of Advanced Industrial Science and Technology)

- PO2B-04 **Maximization of overload tolerance of HTS induction/synchronous motor**

Siyu Guo, Taketsune Nakamura, Shinya Okajima, Naoyuki Amemiya (Kyoto University), Masaaki Yoshikawa, Yoshitaka Itoh, Toshihisa Terazawa (IMRA MATERIAL R&D Co., Ltd.) and Yoshimasa Ohashi (AISIN SEIKI Co., Ltd.)

- PO2B-05 **Drive and regeneration characteristics of HTS induction/synchronous motor**

Tomoharu Karashima, Taketsune Nakamura, Naoyuki Amemiya (Kyoto University), Masaaki Yoshikawa, Yoshitaka Itoh, Toshihisa Terazawa (IMRA MATERIAL R&D Co., Ltd.) and Yoshimasa Ohashi (AISIN SEIKI Co., Ltd.)

PO2C- Heat Transfer and Heat Switch

- PO2C-01 **Study on improvement of heat transfer performance in cryogenic thermosyphon heat pipe**

Hiro Ohzeki and Tetsuji Okamura (Tokyo Institute of Technology)

- PO2C-02 **Proposal of a prediction method for forced convection and nucleate boiling heat transfer characteristics in a cryogenic cooling system using the metal-particle sintered porous medium**

Shunsuke Sasaki, Satoshi Ito and Hidetoshi Hashizume (Tohoku University)

- PO2C-03 **Measurement of heat leak by radiation in low temperature**

Jiwon Lee, Shoichi Yokoyama and Shinji Sato (Mitsubishi Electric Corporation)

- PO2C-04 **Development of 2 - 0.05 K class gas-gap heat switch with sub-micro watt off conductance for ADR**

Akio Hoshino, Kenta Imai, Mamoru Mochida, Ami Konisho, Shunji Kitamoto (Rikkyo University), Saori Konami, and Hiroshi Matsuo

Oral Session 6 High Efficiency Cryocoolers, 11:00 - 12:00 (Small Hall)

Session Chairs: Francesco Dioguardi and Mingyao Xu

- OR6-01 **Thermoacoustic cryocooler with linear motor type phase adjuster**

Linyu Li (University of Chinese Academy of Sciences), Zhanghua Wu (Key laboratory of

Cryogenics, CAS), Jingyuan Xu (University of Chinese Academy of Sciences), Limin Zhang, Ercang Luo and Wei Dai (Key laboratory of Cryogenics, CAS)

OR6-02 High-reliability and high-efficiency cryocoolers for HTS applications

Daniel Willems, Jeroen Mullié, Tonny Benschop and Garnt de Jonge (Thales Cryogenics BV)

OR6-03 Experimental investigation of pulse tube refrigerator with warm displacer

Yazhi Shi and Shaowei Zhu (Tongji University)

OR6-04 Study on the displacer in a stirling cryocooler

Jianying Hu, Ercang Luo, Limin Zhang, Xiaotao Wang and Wei Dai (Key laboratory of Cryogenics, CAS)

Lunch, 12:00 - 13:30

Oral Session 7 Large Capacity Cryocoolers, 13:30 - 15:30 (Small Hall)

Session Chairs: Lutz Decker and Fons De Waele

OR7-01 [Invited] Use of Stirling cryogenerators in HTS systems

Francesco Dioguardi (DH Industries BV), Harrie Vermeulen (DH Industries USA Inc.) and Fred Catseman (DH Industries BV)

OR7-02 [Invited] Neon Turbo-Brayton refrigerator for HTS cable

Shigeru Yoshida, Hirokazu Hirai and Masaki Hirokawa (Taiyo Nippon Sanso)

OR7-03 Air Liquide cryogenic solutions for HTS refrigeration

Cecile Gondrand, Fabien Durand, Franck Delcayre and Loic Brunet-Manquat (Air Liquide Advanced Technologies)

OR7-04 Helium as refrigerant for refrigerators for HTS power cables

S. Kloepfel, Ch. Haberstroh, Hans Quack (TU Dresden) and F. Holdener (Shirokuma GmbH)

OR7-05 Development of Brayton cycle refrigerator for HTS Cable

Masahiro Shimoda, N. Nakamura, S. Komatsu, S. Ueda, M. Kudo, R. Ohno, H. Yaguchi and Akito Machida (Mayekawa MFG. Co., Ltd.)

OR7-06 Development of a large cooling capacity single stage GM cryocooler for HTS applications around 80 K

Koji Yamada, Qian Bao and Mingyao Xu (Sumitomo Heavy Industries, Ltd.)

Afternoon Break, 15:30 - 15:55 (Multi-purpose Hall)

Discussion, 15:55 - 16:50 (Small Hall)

Closing, 16:50 – 17:00 (Small Hall)