

## PROGRAMME

**MONDAY, DECEMBER 11**

*Conference Hall 5F*

07:45 - 08:30 Registration

08:30 - 08:40 Opening/Welcome

### **Innovative Applications -- Session A**

**Chairs:** David Cardwell, and Mitsuru Izumi

08:40 – 09:05 **(M1-I) Mark D. Ainslie**, Univ. of Cambridge  
Towards Ultra-Light Superconducting Rotating Machines for Next-Generation  
Transport and Power Applications: A Roadmap

09:05 – 09:30 **(M2-I) Motohiro Miki**, TUMSAT  
Design and Construction of Synchronous Machine Using Bulk High Temperature  
Superconductor for Marine Application

09:30 – 09:55 **(M3-I) Young Zhao**, Univ. of Southwest Jiaotong University  
Progress of High- $T_c$  Superconducting Maglev Vehicle in China

09:55 – 10:20 **(M4-I) Ken Nagashima**, RTRI  
Application of REBCO Bulks and REBCO Coils for Magnetic Bearing of Flywheel  
Energy Storage System

10:20 - 10:40 **Refreshment Break**

### **Innovative Applications and Processing of Bulk HTS -- Session B**

**Chairs:** Pavel Diko and Young Zhao

10:40 - 11:05 **(M5-I) F. N. Werfel**, GmbH (ATZ)  
HTS bulk technology development required to enable commercialization

11:05 – 11:30 **(M6-I) H. Teshima**, Nippon Steel  
Development and Recent Progress of RE-Ba-Cu-O Bulk Superconductors -QMG-in  
NSSMC

11:30 – 11:45 **(M7-O) Xin Yao**, Shanghai Jiao Tong University  
High Performance REBa<sub>2</sub>Cu<sub>3</sub>O<sub>x</sub> Superconductor Bulks

11:45 – 12:00 **(M8-O) Devendra K Namburi**, University of Cambridge  
Dense (RE)BCO single grain bulk superconductors fabricated via top seeded  
infiltration and growth; an overview

12:00 - 13:00 **Lunch**  
*Lounge, 2F*

13:00 - 14:20 **Poster Presentation – Session -- I**  
**Chairs:** Naomichi Sakai  
*Global Learning Common (GLC), 3F*

**Innovative Applications and Optimization of Bulk HTS -- Session C**  
**Chairs:** F. N. Werfel and C.-J. Kim

- 14:20 – 14:45 **(M9-I) T. Nakamura, RIKEN**  
High resolution NMR on Superconducting Bulk Magnet
- 14:45 – 15:10 **(M10-I) M.R. Koblichka, Saarland University**  
Nonwoven Nanowire Fabrics: A New Class of Bulk Superconductors
- 15:10 – 15:25 **(M11-O) Wanmin Yang, Shaanxi Normal University**  
Theoretical and Experimental Identification of seeds number on the Crystal Morphology and Physical Properties of GDBCO Bulks by GD+011 TSIG Process
- 15:25 – 15:40 **(M12-O) P. Vanderbemden, University of Liege**  
Magnetic shielding of open and semi-closed tubes made of bulk superconductors: the role of a cap
- 15:40 – 15:55 **(M13-O) Y. Sakurai, University of Tokyo**  
Design of the prototype SMB system for the space-borne polarimeter

15:55 – 16:15 **Refreshment Break**

**Characterization of Bulk HTS -- Session D**  
**Chairs:** Noudem Jacques and Hiroyuki Fujishiro

- 16:15 – 16:40 **(M14-I) P. Diko, Slovak Academy of Sciences**  
Microstructural Aspects of REBCO Bulks with Chemical Pinning
- 16:40 – 17:05 **(M15-I) Jun-ichi Shimoyama**  
Chemical approaches to enhance performance of RE123 bulks
- 17:05 – 17:20 **(M16-O) J.H Durrell, Univ. of Cambridge**  
Tensile Strength of Bulk Superconductors – Towards Higher Field
- 17:20 – 17:35 **(M17-O) S. Pavan Kumar Naik, SIT**  
Influence of processing conditions on the microstructure and physical properties in IG processed mixed REBCO bulk superconductors
- 17:35 – 17:50 **(M18-O) Toshiteru Kii, Kyoto University**  
Effect to periodic magnetic field quality of non-uniformity of  $J_c$  in each piece of bulk superconductor array

**\*\*\*SPECIAL PLENARY LECTURE\*\*\***

**Chairs:** M.S. Ramachandra Rao

- 17:50 – 18:20 **(M19-SP) Masato Murakami, SIT**  
Potential of high temperature bulk superconductor magnets

18:30 - 21:00 **Workshop Banquet**  
*Cafeteria, 3F*

## TUESDAY, DECEMBER 12

### New Materials of Bulk HTS (I) & Innovative Applications -- Session E

**Chairs:** M. R. Koblishka and Tetsuo Oka

- 08:40 – 09:05 **(T20-I) Sang-Im Yoo**, Seoul National Univ.  
Recent progress in high performance GdBCO coated conductors by RCE-DR and its applicability for the fabrication of magnetic shielding plates
- 09:05 – 09:30 **(T21-I) M.S. Ramachandra Rao**, IITM  
Doped Diamond: Superconductivity and Quantum Computing
- 09:30 – 09:45 **(T22-O) V.A. Vlasenko**, P.N. Lebedev Physical Institute  
Superconducting properties of FeSe wires fabricated by PIT method
- 09:45 – 10:00 **(T23-O) T. Matsumura**, University of Tokyo  
Effect of Proton Irradiation to a Trapped Field Bulk YBCO for Use in Space
- 10:00 – 10:15 **(T24-O) K.S. Pervakov**, P.N. Lebedev Physical Institute  
Production of Bulk Ni-Doped BaFe<sub>2</sub>As<sub>2</sub> By Mechanical Alloying
- 10:15 – 10:30 **(T25-O) A. Koblishka-Veneva**, Saarland University  
Transmission-EBSD applied to IG-processed, bulk superconductor materials
- 10:30 – 10:50 **Refreshment Break**

### YOUNG INVESTIGATOR FORM – Session F

**Chairs:** Miryala Muralidhar and Philippe Vanderbemden

- 10:50 – 11:00 **(T26-YI) M. Sushma**, SIT/SIS  
Processing, Microstructure, Critical Current Density ( $J_c$ ) and Trapped Field of Single Grain Bulk YBa<sub>2</sub>Cu<sub>3</sub>O<sub>y</sub> Superconductors Grown by IG process
- 11:00 – 11:10 **(T27-YI) K. Takahashi**, Iwate University  
Mechanical Stress and Strain in REBaCuO Ring Bulk Reinforced By Metal ring During Field-Cooled Magnetization
- 11:10 – 11:20 **(T28-YI) M. Higuchi**, SIT  
Enhanced flux pinning in sintered bulk MgB<sub>2</sub>
- 11:20 – 11:30 **(T29-YI) E. Shaanika**, TUMSAT  
Core Loss Analysis of a Bulk HTS Synchronous Machine at 2 T and 3 T Rotor Magnetization
- 11:30 – 11:40 **(T30-YI) Petra Hajdova**, Slovak Academy of Sciences  
Growth, microstructure and properties of GdBCO-Ag superconductors
- 11:40 – 11:50 **(T31-YI) Jun Qian**, Shanghai Jiao Tong University  
Almost Complete Peritectic Reaction in YBa<sub>2</sub>(Cu<sub>1-x</sub>Fe<sub>x</sub>)<sub>3</sub>O<sub>7.8</sub> crystallization involving Nanosized Primary Phase
- 11:50 – 13:00 **Lunch**  
*Lounge, 2F*

## **Activation Techniques and Applications of Bulk HTS – Session G**

**Chairs:** Mark D. Ainslie and Jun-ichi Shimoyama

- 13:00 – 13:25 **(T32-I) R. Weinstein**, Uof H  
Sudden Giant Field Increase During Pulsed-ZFC Activation and Its Effect on Required Pulse Magnitude
- 13:25 - 13:50 **(T33-I) H. Fujishiro**, Iwate Univ.  
Mechanical Reinforcement of REBaCuO Bulk During Field –Cooled Magnetization “Road to Achieve Trapped Field Higher than 20 Tesla”
- 13:50 – 14:15 **(T34-I) T. Oka**, Niigata University  
Feasible Applications of Bulk HTS magnets and Magnetic Field-Capturing Characteristics in Their Activation Processes
- 14:15 - 14:35 **Refreshment Break**

## **New Materials of Bulk HTS (II) & Innovative Applications -- Session H**

**Chairs:** Prof. Sang-Im Yoo and Prof. Xin Yao

- 14:35 – 15:00 **(T35-I) J. Noudem**, CRISMAT, CNRS /ENSICAEN-UNICAEN  
Bulk superconducting cryo-magnets processed by Spark Plasma Sintering/Texturing
- 15:00 – 15:25 **(T36-I) C.-J. Kim**, Korea Atomic Energy Research Institute  
Optimization of processing parameters for achieving the high critical current density in MgB<sub>2</sub> bulk superconductors
- 15:25 – 15:40 **(T37-O) T. Naito**, Iwate University  
Fabrication process and vortex pinning properties of MgB<sub>2</sub> bulks prepared by infiltration method using amorphous boron powder
- 15:40 – 15:55 **(T38-O) T. Prikhna**, NASU  
Correlations Between Superconducting Characteristics and Structure of MgB<sub>2</sub>-based materials, Ab-initio Modeling of Boron Substitution by Oxygen and Carbon in MgB<sub>2</sub> (Electron Density and Thermodynamic Stability).
- 15:55 – 16:10 **(T39-O) Hong Zhang**, Southwest Jiaotong University  
A comparison of effect of graphene and reduced graphene oxide addition on superconductivity of MgB<sub>2</sub> bulk prepared by diffusion method
- 16:10 – 16:30 **Closing**

POSTER SESSION Global Learning Commons (GLC, 3F)

**Chairs:** Naomichi Sakai

POSTER PRESENTATION – SESSION H (MONDAY, DECEMBER 13:00 noon)

**PROCESSING, CHARACTERIZATION, SIMULATION, AND INNOVATIVE APPLICATIONS OF BULK HTS**

**M0P1 Bottom-seeded Infiltration and Growth for Fabrication of Single Domain GdBCO Superconducting ring**

*Peng-Tao Yang, Shaanxi Normal University, China*

**M02P Densification of Dy123 melt-textured bulks by pre-sintering**

*Sato Takumi, Aoyama Gakuin University, Japan*

**M03P Effects of Fullerene Addition on Pinning properties and Microstructures in Melt-textured Y-Ba-Cu-O Superconductors**

*M. Tanichi, Shibaura Institute of Technology, Japan*

**M04P Size Dependence of GdBaCuO Superconducting Bulk on Trapped Field Properties By Pulsed Field Magnetization using Split Coil**

*F Shimoyashiki, Iwate University, Japan*

**M0P5 Dynamic Characteristics of the Man-Loading Hybrid Maglev Vehicle Employing PML and SML**

*Ruixue Sun, Southwest Jiaotong University, China*

**M06P Magnetic flux profile studies on Nano ceria doped YBCO Superconductors fabricated through POIG process**

*P. M. Swarup Raju, GITAM, India*

**M07P Critical Current Properties of (Y,Gd)BaCuO Superconducting Bulks Grown By Mixed Y123, Y211 and Gd211 Precursor**

*K. Sawada, Iwate University, Japan*

**M08P Mechanical Properties of Superconducting (Gd,Y)BaCuO Large Single-Grain Material Fabricated by RE Compositional Gradient Technique**

*A. Murakami, National Institute of Technology, Japan*

**M09P Flux pinning analysis of superconducting YBCO foam struts**

*M.R. Koblischka, Saarland University, Germany*

**M10P EBSD-characterization of specific microstructures in RE-BCO superconductors**

*A. Koblischka-Veneva, Saarland University, Germany*

**M11P Magnetizing performance evaluation of HTS bulk magnet using a 12 K refrigerator with high cooling capacity**

*K. Yokoyama, Ashikaga Institute of Technology, Japan*

**M12P Magnetization of Permanent Magnet Using a Superconducting Bulk magnet**

*Shoya Hasebe, Niigata University, Japan*

**M13P Basic research for improving the magnetic levitation force and vertical vibration transmission characteristics of the magnetic levitation type superconducting seismic isolation system**

*Shuhei Sasaki, Hachinohe College, Japan*

**M14P Levitation performance of the second-generation HTS maglev vehicle serving in a ring test line**

*Wuyang Lei, Southwest Jiaotong University, China*

**M15P Sweep Rate Dependence of Electromagnetic and Mechanical Properties In REBaCuO Disk Bulk During Field-Cooled Magnetization Under Temperature Variation**

*S. Namba, Iwate University, Japan*

- M16P Numerical Studies on the Dynamic Responses of Multiple Levitated High-Temperature Superconductors by a Vector Potential Method**  
*Ye Changqing*, Southwest Jiaotong University, *China*
- M17P Numerical Simulation of Trapped-Field Properties by Pulsed-Field Magnetization In Gd-Ba-Cu-O disk Bulk Modeled Under Various  $J_c(B, T)$  Characteristics**  
*T. Hirano*, Iwate University, *Japan*
- M18P Simulation and Experiment Research on the Dynamic Levitation Force and Thermal Behavior of Bulk Superconductors under a Varying External Magnetic Field**  
*Hengpei Liao*, Southwest Jiaotong University, *China*
- M19P Magnetic separation of nickel sulfate using the superconducting bulk magnet**  
*Hideto Sasaki*, Niigata University, *Japan*
- M20P Estimating the rotational energy loss of a superconducting magnetic bearing under no-gravity for use in space applications**  
*Hiroaki Kanai*, Yokohama National University, *Japan*
- M21P MgB<sub>2</sub> pellets with diamond nanocomposites: superconducting properties and flux pinning**  
*D. Longi Joseph*, SIT, *Japan*
- M22P Progress in critical current density ( $J_c$ ) in sintered MgB<sub>2</sub> bulks**  
*M. Muralidhar*, SIT, *Japan*
- M23P Critical current density and flux pinning in rapid thermally quenched bulk MgB<sub>2</sub>**  
*Sugiyama*, SIT, *Japan*
- M24P Flux pinning in bulk, C-added MgB<sub>2</sub>**  
*A. Wiederhold*, Saarland University, *Germany*
- M25P Doping Effects of Titanium Group Elements On the Critical Current Density for MgB<sub>2</sub> Bulks Fabricated By *ex-situ* Spark Plasma Sintering**  
*Y. Takashi*, Iwate University, *Japan*
- M26P Microstructure of bulk FeSe with silver addition**  
*K. Furutani*, SIT, *Japan*
- M27P Investigation of the shielding properties of a Bi-2212 bulk superconducting tube subjected to an inhomogeneous magnetic field at various temperatures**  
*K. Hogan*, University of Liege, *Belgium*
- M28P Lateral Stability for the side-suspended rotating system with tri-modal magnetic field guideway**  
*Li-Feng Zhao*, MSTMV, *China*
- M29P Superconducting performance, microstructure, and trapped field of top-seeded melt processed bulk Y<sub>3</sub>Ba<sub>5</sub>Cu<sub>8</sub>O<sub>x</sub>**  
*S. Pavan Kumar Naik*, SIT, *Japan*
- M30P Numerical analysis of spring characteristics and rotational loss of superconducting magnetic bearings for a polarization modulator**  
*T. Shimomura*, University of Tokyo, *Japan*