

Oral | Material, processing, and characterization

📅 Mon. Jul 28, 2025 9:00 AM - 10:35 AM JST | Mon. Jul 28, 2025 12:00 AM - 1:35 AM UTC 🏛️ Convention Hall(300, 3F)

[O1] RE-Fe-B Magnets I

Session Chair: Dr. Nora Dempsey (Institut NEEL, CNRS)

◆ Plenary

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[O1-1]

A critical review of permanent magnet materials: options for reduction, substitution and recycling of strategic elements

*Oliver Gutfleisch¹ (1. TU Darmstadt (Germany))

◆ Invited

9:30 AM - 9:50 AM JST | 12:30 AM - 12:50 AM UTC

[O1-2]

Recent advances in the development of high-performance HRE-free and RE-lean permanent magnets

*H. Sepehri Amin¹, N. Kulesh¹, J. Zhang¹, Z. H. Kautsar¹, A. Bolyachkin¹, X. Tang¹, H. Nakamura², T. Ohkubo¹, K. Hono¹ (1. NIMS (Japan), 2. Shin-Etsu Chemical Co., Ltd. (Japan))

9:50 AM - 10:05 AM JST | 12:50 AM - 1:05 AM UTC

[O1-3]

Diffusion of RE-rich alloys into NdFeB magnetic material produced via the hydrogen ductilisation process (HyDP)

*Oliver Peter Brooks¹, Patrick Powell¹, Enbang Ti¹, David Brown¹, Allan Walton¹ (1. University of Birmingham (UK))

10:05 AM - 10:20 AM JST | 1:05 AM - 1:20 AM UTC

[O1-4]

Fabrication of high-performance HREE-free hot-deformed Nd-Fe-B magnets

*Ryosuke Goto¹, Fumiaki Kihara¹, Takashi Oikawa¹, Hiroshi Miyawaki¹ (1. Daido Steel Co., Ltd. (Japan))

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[O1-5]

Enabling the production of large HRE lean magnets with homogeneous microstructure - the particle size effect in the 2-powder method and core-shell development in large magnets

*Konrad Opelt¹, Mario Schönfeldt¹, Chi-Chia Lin¹, Jürgen Gassmann¹, Imants Dirba², Abdullatif Durgun², Matic Jovičević-Klug³, Oliver Gutfleisch² (1. Fraunhofer IWKS, Fraunhofer Research Institution for Materials Recycling and Resource Strategies, Aschaffener Str. 121, 63457 Hanau (Germany), 2. TU Darmstadt, Department of Materials and Geosciences, Functional Materials, Peter-Grünberg-Str. 16, 64287 Darmstadt (Germany), 3. Max-Planck-Institute for Sustainable Materials GmbH, Department of Microstructure Physics and Alloy Design, Max-Planck-Str. 1, 40237 Düsseldorf (Germany))

Oral | Material, processing, and characterization

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[O2] RE-Fe-B Magnets II

Session Chair: Prof. Oliver Gutfleisch(TU Darmstadt)

◆ Invited

10:55 AM - 11:15 AM JST | 1:55 AM - 2:15 AM UTC

[O2-1]

Cost-Effective Manufacturing of Nano-Grain Neo Magnet

*Jun Cui¹ (1. Ames National Laboratory (United States of America))

◆ Invited

11:15 AM - 11:35 AM JST | 2:15 AM - 2:35 AM UTC

[O2-2]

Breaking Performance Limits in Nd-Fe-B Magnets via Extreme Grain Optimization and Grain Boundary Diffusion Synergy

Qingfeng Shan¹, *Cong Wang¹, Yongjiang Yu¹, Bingqiang Shi¹, Pengfei Wang¹, Yumeng Zhang¹, Jianing Wang¹, Hang Zhao² (1. Yantai Zhenghai Magnetic Material Co., Ltd. (China), 2. Institute of Functional Materials, Central Iron & Steel Research Institute (China))

11:35 AM - 11:50 AM JST | 2:35 AM - 2:50 AM UTC

[O2-3]

Synthesis and Magnetic Properties of Plate-Type Nd-Fe-B Magnets by Electrically Heated Powder Rolling

*Jungryang KIM¹, Yusuke HIRAYAMA¹, Kenta TAKAGI¹, Ayako S. SUZUKI², Mayuka NOZAKI² (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan), 2. S. S. Alloy Co., Ltd. (Japan))

11:50 AM - 12:05 PM JST | 2:50 AM - 3:05 AM UTC

[O2-4]

A comparative study on shell formation and coercivity improvement of Pr-free and Pr-alloyed Nd-Fe-B sintered magnets during grain boundary diffusion process with low-melting Pr-Cu-Al-Ga alloy

*Sujin Lee¹, Ganghwi Kim², Ki-Suk Lee², Sumin Kim¹, Tae-Hoon Kim¹, Kyoung-Hoon Bae³, Dong-Hwan Kim³, Jung-Goo Lee¹ (1. Korea Institute of Materials Science (Korea), 2. Ulsan National Institute of Science and Technology (Korea), 3. Star Group Ind. CO., Ltd. (Korea))

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[O2-5]

Two-Step Grain Boundary Diffusion of Dy/Tb-Nd-Cu for Enhanced Coercivity and Thermal Stability in Nd-Fe-B Hot-Deformed Magnets with Reduced Tb Content

*Zulfa Hilmi Kautsar¹, Xin Tang¹, Keiko Hioki², Hossein Sepehri-Amin^{1,3}, Tadakatsu Ohkubo¹, Kazuhiro Hono^{1,3} (1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (Japan), 2. Daido Corporate Research & Development Center, Daido Steel Co., Ltd. (Japan), 3. Graduate School of Science and Technology, University of Tsukuba (Japan))

Oral | Material, processing, and characterization

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[O3] Processing

Session Chair: Dr. Tadakatsu Ohkubo (NIMS)

◆ Invited

1:30 PM - 1:50 PM JST | 4:30 AM - 4:50 AM UTC

[O3-1]

Rare earth permanent magnets with high cerium content

*Dagmar Goll¹, Ralf Loeffler¹, Marius Boettle¹, Gerhard Schneider¹ (1. Aalen University (Germany))

1:50 PM - 2:05 PM JST | 4:50 AM - 5:05 AM UTC

[O3-2]

Effect of Desorption Treatment Conditions for Recombination on Magnetic Properties in (Nd,Ce)-Fe-B Based HDDR Magnet Powders

Ryo Shimbo^{1,2}, Shunsuke Nomura¹, Takashi Horikawa^{1,2}, *Masao Yamazaki¹, Masashi Matsuura², Ryosuke Kainuma², Satoshi Sugimoto³ (1. Aichi Steel Corporation (Japan), 2. Department of Materials Science, Graduate School of Engineering, Tohoku University (Japan), 3. Department of Management Science and Technology, Graduate School of Engineering, Tohoku University (Japan))

2:05 PM - 2:20 PM JST | 5:05 AM - 5:20 AM UTC

[O3-3]

Anisotropic spherical NdFeB powder obtained by hydrogenation, disproportionation, desorption, and recombination (HDDR) of a gas atomized powder

BLANCA LUNA CHECA FERNANDEZ¹, DIEGO MONZON¹, PABLO ORTEGA RUIZ¹, GABRIELA SARRIEGUI¹, NEREA BURGOS¹, *JOSE MANUEL MARTIN¹, VALENTINA ZHUKOVA², ARKADY ZHUKOV² (1. CEIT-Basque Research and Technology Alliance (BRTA), Manuel Lardizabal 15, 20018 Donostia/San Sebastián (Spain), 2. Department of Advanced Polymers and Material, University of the Basque Country, UPV/EHU, Manuel Lardizabal 3, 20018 Donostia/San Sebastián (Spain))

2:20 PM - 2:35 PM JST | 5:20 AM - 5:35 AM UTC

[O3-4]

Grain boundary diffusion of gas-atomized Nd-Pr-Al-Cu powders on Nd₂Fe₁₄B-based magnets

*Carter Tesch¹, Balamurugan Balasubramanian¹ (1. Hoeganaes Corporation, 1001 Taylors Ln, Cinnaminson, NJ 08077 (United States of America))

2:35 PM - 2:50 PM JST | 5:35 AM - 5:50 AM UTC

[O3-5]

Rapid sintering of microcrystalline Nd-Fe-B systems: Challenges and opportunities

*Tomaž Tomše¹, Mihaela Rebernik¹, Fabian Burkhardt¹, Lindrit Krasniqi¹, Sašo Šturm¹, Kristina Žužek¹ (1. Jožef Stefan Institute, Department for Nanostructured Materials (Slovenia))

2:50 PM - 3:05 PM JST | 5:50 AM - 6:05 AM UTC

[O3-6]

A NOVEL APPROACH FOR SINTERING Nd₂Fe₁₄B-, SmCo₅- and Sm₂Co₁₇-BASED MAGNETS BY THE HDDR PROCESS

*Ihor I. Bulyk^{1,2,4}, RenHui Liu^{1,2}, HePing Zhu¹, Sujuan Wang¹, MuNan Yang^{1,2,3}, Ihor V. Borukh⁴, Oleksandr P. Kononiuk⁴ (1. Jiangxi University of Science and Technology (China), 2. National Rare Earth Functional Materials

Innovation Center (China), 3. Ganjiang Innovation Academy, Chinese Academy of Science (China), 4. Karpenko Physico-Mechanical Institute of National Academy of Sciences of Ukraine (Ukraine))

Oral | Material, processing, and characterization

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[O4] Characterization

Session Chair: Dr. Matthew J. Kramer(Ames National Laboratory)

📌 Invited

3:25 PM - 3:45 PM JST | 6:25 AM - 6:45 AM UTC

[O4-1]

Three-dimensional multimodal analyses on Nd-Fe-B magnets

*Satoshi Okamoto¹, Tomomi Suwa¹, Takuya Taniguchi¹, Kousuke Kato¹, Motohiro Suzuki², Yujiro Hayashi³, Jaemyung Kim³, Takahiko Iriyama⁴, Hiroshi Miyawaki⁴, Tadakatsu Ohkubo⁵ (1. Tohoku University (Japan), 2. Kwansei Gakuin University (Japan), 3. RIKEN (Japan), 4. Daido Steel Co. (Japan), 5. National Institute for Materials Science (Japan))

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[O4-2]

2D and 3D magnetic imaging of interaction domains in nanostructured Nd₂Fe₁₄B using X-ray imaging techniques

Philipp Kläßen^{1,6}, Damian Günzing^{1,6}, Alex Aubert², Thomas Feggeler^{4,6}, Benedikt Eggert¹, Jeffrey Neethirajan⁵, Lukas Schäfer², Fernando Maccari², Manuel Guizar-Sicairos^{3,7}, Valerio Scagnoli^{3,8}, Mirko Holler³, David Shapiro⁶, Alex Ditter⁶, Enrico Bruder², Heiko Wende¹, Konstantin Skokov², Claire Donnelly⁵, Oliver Gutfleisch², *Katharina Ollefs¹ (1. University Duisburg-Essen (Germany), 2. Technical University Darmstadt (Germany), 3. Paul Scherrer Institut (Switzerland), 4. National Synchrotron Light Source II (United States of America), 5. Max-Planck-Institute for Chemical Physics of Solids (Germany), 6. Lawrence Berkeley National Laboratory (United States of America), 7. École Polytechnique Fédérale de Lausanne (Switzerland), 8. ETH Zurich (Switzerland))

4:00 PM - 4:15 PM JST | 7:00 AM - 7:15 AM UTC

[O4-3]

Exploring Microstructural Phenomena in Rare Earth Magnets using Atom Probe Tomography

*Hansheng Chen¹, Jiaying Jin², Mi Yan², Simon Ringer¹ (1. The University of Sydney (Australia), 2. Zhejiang University (China))

4:15 PM - 4:30 PM JST | 7:15 AM - 7:30 AM UTC

[O4-4]

Unraveling the nanostructure and coercivity mechanism of single-phase Ce(Co_{0.8}Cu_{0.2})_{5.4} hard magnet

*Tatiana Smoliarova¹, András Kovács², Nikita Polin³, Xinren Chen³, Esmaeil Adabifiroozjaei⁴, Leopoldo Molina-Luna⁴, Oliver Gutfleisch⁴, Konstantin Skokov⁴, Michael Farle¹, Baptiste Gault³, Rafal E Dunin-Borkowski² (1. Faculty of Physics and Center for Nanointegration, Universität Duisburg-Essen, Duisburg, Germany (Germany), 2. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Germany (Germany), 3. Max-Planck-Institut für Nachhaltige Materialien GmbH, Düsseldorf 40237, Germany (Germany), 4. Institute of Materials Science, Technische Universität Darmstadt, 64287 Darmstadt, Germany (Germany))

Tue. Jul 29, 2025

Oral | Material, processing, and characterization

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[O5] RE-Fe-B Magnets III

Session Chair: Prof. Dagmar Goll(Aalen University)

 Invited

9:00 AM - 9:20 AM JST | 12:00 AM - 12:20 AM UTC

[O5-1]

New Insight into Development of Pr-based Grain Boundary Diffusion Process for High-Performance HRE-Free Nd-Fe-B Sintered Magnets

Seol-mi Lee^{1,2}, Ji-Hyeon An¹, Ganghwi Kim², Ki-Suk Lee², Su-min Kim¹, *Tae-Hoon Kim¹, Jung-Goo Lee¹ (1. Korea Institute of Materials Science (KIMS) (Korea), 2. Ulsan National Institute of Science and Technology (UNIST) (Korea))

 Invited

9:20 AM - 9:40 AM JST | 12:20 AM - 12:40 AM UTC

[O5-2]

Reduction of heavy rare earths in Nd-Fe-B-based magnets by diffusion source and application area optimization

*Imants Dirba¹, Abdullatif Durgun¹, Dominik Ohmer², Matthias Katter², Andreas Thul³, Hossein Sepehri Amin⁴, Oliver Gutfleisch¹ (1. Functional Materials, Institute of Materials Science, Technical University of Darmstadt, 64287 Darmstadt, Germany (Germany), 2. Vacuumschmelze GmbH & Co. KG, 63412 Hanau, Germany (Germany), 3. Institute of Electrical Machines (IEM), RWTH Aachen University, 52062 Aachen, Germany (Germany), 4. National Institute for Materials Science, Tsukuba 305-0047, Japan (Japan))

9:40 AM - 9:55 AM JST | 12:40 AM - 12:55 AM UTC

[O5-3]

High Coercivity of 2.8 T in HRE-Free Anisotropic Magnets by Microstructure Engineering

*Xin Tang¹, H. Sepehri-Amin¹, T. Kajiwara², H. Miyawaki², T. Ohkubo¹, K. Hono¹ (1. National Institute for Materials Science (Japan), 2. Daido Corporate Research & Development Center, Daido Steel Co., Ltd., Nagoya 457-8545, Japan (Japan))

9:55 AM - 10:10 AM JST | 12:55 AM - 1:10 AM UTC

[O5-4]

Direct reduction of Rare Earth Oxides to Magnets

Rambabu Kuchi¹, Jordan Schlage¹, Ihor Z. Hlova¹, Yaroslav Mudryk¹, Robert Kinner², Shaun O'Donnell³, Rebecca Smaha³, Sage Bauers³, *Matthew J. Kramer¹ (1. Ames National Laboratory (United States of America), 2. Powdermet Inc. (United States of America), 3. National Renewable Energy Laboratory (United States of America))

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[O5-5]

Investigation on various selected area grain boundary diffusion approaches for Nd-Fe-B magnets

*Xuhang Zhang¹, Chaochao Zeng¹, Mingpeng Kou¹, Hongya Yu¹, Xichun Zhong¹, Zhongwu Liu¹ (1. School of Materials Science and Engineering, South China University Of Technology (China))

Oral | Applications: Motors and others

 Tue. Jul 29, 2025 10:45 AM - 12:15 PM JST | Tue. Jul 29, 2025 1:45 AM - 3:15 AM UTC  Convention Hall(300, 3F)

[O6] Applications

Session Chair: Dr. Yusuke Hirayama(National Institute of Advanced Industrial Science and Technology)

 Invited

10:45 AM - 11:05 AM JST | 1:45 AM - 2:05 AM UTC

[O6-1]

High-Speed and High-Efficiency Cooling Fan Motor with Nd-based Bonded Magnet and Fe-based Nanocrystalline Soft Magnetic Alloy

*Kenji Nakamura¹ (1. Tohoku University (Japan))

11:05 AM - 11:20 AM JST | 2:05 AM - 2:20 AM UTC

[O6-2]

Design Studies on IPMSM with Radially Oriented Arc-Shaped Metal Magnet for Automotive Traction Drives

Jumpei Hinata¹, *Takanori Kajiwara¹, Takashi Oikawa¹, Yoshiaki Kano² (1. Corporate R&D center, Daido Steel Co., Ltd. (Japan), 2. Dept. of Electrical and Electronics Engineering, Daido University (Japan))

11:20 AM - 11:35 AM JST | 2:20 AM - 2:35 AM UTC

[O6-3]

Applications of Permanent Magnets at the National Synchrotron Light Source-II

*Toshiya Tanabe¹, Dean Hidas¹, James Rank¹, Marco Musardo¹, Thomas Brookbank¹, Brian Eipper¹, Patrick N'Gotta¹ (1. Brookhaven National Laboratory (United States of America))

 Invited

11:35 AM - 11:55 AM JST | 2:35 AM - 2:55 AM UTC

[O6-4]

Development of an active magnetic refrigerator for hydrogen liquefaction

*Koji Kamiya¹, Kyohei Natsume¹, Akira Uchida¹, Tsuyoshi Shirai¹, Akiko T. Saito¹, Takenori Numazawa¹, Xin Tang¹, Hossein Sepehri-Amin¹, Koichi Matsumoto² (1. National Institute for Materials Science (Japan), 2. Kanazawa University (Japan))

 Invited

11:55 AM - 12:15 PM JST | 2:55 AM - 3:15 AM UTC

[O6-5]

Magnetic Refrigeration from Ambient Temperature to Hydrogen Liquefaction: bringing a technology to the market

*Konstantin P Skokov¹, Wei Liu¹, Alex Aubert¹, Falk Münch², Dimitry Benke², Tino Gottschall^{2,3}, Max Fries², Oliver Gutfleisch¹ (1. Technische Universität Darmstadt (Germany), 2. Magnotherm Solutions GmbH (Germany), 3. Helmholtz-Zentrum Dresden-Rossendorf (Germany))

Oral | Raw materials

 Tue. Jul 29, 2025 1:30 PM - 2:55 PM JST | Tue. Jul 29, 2025 4:30 AM - 5:55 AM UTC  Convention Hall(300, 3F)

[O7] Raw Materials & Recycling I

Session Chair: Prof. David Brown (University of Birmingham)

 Invited

1:30 PM - 1:50 PM JST | 4:30 AM - 4:50 AM UTC

[O7-1]

Re-establishing Mine-to-Magnet Manufacturing in the United States

Judson Marte¹, Alan Lund¹, *Edward Pang¹, David Maybury¹, Jim McNerney¹ (1. MP Materials (United States of America))

 Invited

1:50 PM - 2:10 PM JST | 4:50 AM - 5:10 AM UTC

[O7-2]

Recent development in recycling of RE permanent magnets of the RE-Fe-B type: Challenges and solutions.

*Carlo Burkhardt¹ (1. Pforzheim University (Germany))

2:10 PM - 2:25 PM JST | 5:10 AM - 5:25 AM UTC

[O7-3]

MagREEsource : the green Rare Earth Magnet company

*SOPHIE RIVOIRARD¹ (1. MAGREESOURCE (France))

2:25 PM - 2:40 PM JST | 5:25 AM - 5:40 AM UTC

[O7-4]

Efficient Recovery of Rare Earth Elements from Diluted Magnet e-Waste Streams

*Denis Prodius¹ (1. Critical Materials Innovation Hub, Ames National Laboratory (USDOE) (United States of America))

2:40 PM - 2:55 PM JST | 5:40 AM - 5:55 AM UTC

[O7-5]

Strategy for producing Nd-Fe-B permanent magnets with short-loop recycling methods for high-performance applications

Gatien Bacchetta¹, *Frederico Orlandini Keller¹, Olivier Tosoni², Cyril Rado², Sorana Luca² (1. Orano Projets, Permanent Magnets Dpt, Montigny-le-Bretonneux 78180, France (France), 2. Univ. Grenoble Alpes, CEA LITEN, Grenoble 38000, France (France))

Oral | Raw materials

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[O8] Raw Materials & Recycling II

Session Chair: Prof. Gopalan Raghavan(International Advanced Research Centre for Powder Metallurgy and New Materials)

 Invited

3:15 PM - 3:35 PM JST | 6:15 AM - 6:35 AM UTC

[O8-1]

Rapidly Quenched Rare Earth Iron Boride Magnets

*DAVID Brown¹ (1. University of Birmingham (UK))

3:35 PM - 3:50 PM JST | 6:35 AM - 6:50 AM UTC

[O8-2]

Rapid quenching of nanocrystalline Nd-Fe-B materials for high performance magnets from recycled feedstock in industrial scale: Challenges and opportunities

*Karsten Rachut¹, David Bender¹, Alexander Buckow¹, Iliya A. Radulov², Jürgen Gassmann² (1. Heraeus Remloy (Germany), 2. Fraunhofer Research Institution for Materials Recycling and Resource Strategies IWKS (Germany))

3:50 PM - 4:05 PM JST | 6:50 AM - 7:05 AM UTC

[O8-3]

Tailoring the Fraction of the RE rich Phase in Recycled Powders Obtained via Jet Milling

*Marcelo Augusto Rosa¹, Leonardo Antunes¹, Wagner Macedo¹, Imants Dirba², Alan Döring², Oliver Gutfleisch², Paulo Wendhausen¹ (1. UFSC (Brazil), 2. TUD (Germany))

4:05 PM - 4:20 PM JST | 7:05 AM - 7:20 AM UTC

[O8-4]

Hydrogen plasma assisted recycling process of end-of-life Nd-Fe-B based permanent magnets

*Rafael Gitti Tortoretto Fim¹, Nartai Chimed¹, Tim Schwartz¹, Ilya Radulov², Oliver Diehl², Jürgen Gassman², Dierk Raabe¹, Matic Jovičević-Klug¹ (1. Max-Planck-Institute for Sustainable Materials (MPI SusMat) (Germany), 2. IWKS Fraunhofer Research Institution for Materials Recycling and Resources Strategies (Germany))

4:20 PM - 4:35 PM JST | 7:20 AM - 7:35 AM UTC

[O8-5]

Preventing the downcycle: Removing epoxy resins from sintered NdFeB magnets for improved recycling

*Anna Mary Dickinson-Lomas¹, Matthew J Keith¹, Gary A Leeke¹, Michael J Jenkins¹, David N Brown¹ (1. University of Birmingham (UK))

Wed. Jul 30, 2025

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[O9] RE Nitrides

Session Chair: Dr. Takahiko Iriyama(*Daido Steel Inc.*)

🎤 Plenary

9:00 AM - 9:30 AM JST | 12:00 AM - 12:30 AM UTC

[O9-1]

Novel High Frequency Magnetic Properties of Rare Earth-Transitional Metal Intermetallic Compounds

*Jinbo Yang¹, Wenyun Yang¹, changsheng wang¹, Fashen Li² (1. Peking University (China), 2. Lanzhou University (China))

🎤 Invited

9:30 AM - 9:50 AM JST | 12:30 AM - 12:50 AM UTC

[O9-2]

Process development of high-performance Sm-Fe-N permanent magnet

*Yusuke Hirayama¹, Shusuke Okada¹, Wataru Yamaguchi¹ (1. National Institute of Advanced Industrial Science and Technology (Japan))

9:50 AM - 10:05 AM JST | 12:50 AM - 1:05 AM UTC

[O9-3]

Particle size effects on degree of alignment in Ba-Cu doped Sm₂Fe₁₇N₃ sintered magnets

*Yuta Iida^{1,2}, Akihide Hosokawa², Wataru Yamaguchi², Yusuke Hirayama² (1. Niterra Co., Ltd. (Japan), 2. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

10:05 AM - 10:20 AM JST | 1:05 AM - 1:20 AM UTC

[O9-4]

Effect of Mn doping on the synthesis and properties of nearly spherical Sm₂Fe₁₇N₃ powders

Pengfei Yue¹, Dongsheng Shi¹, Jingwu Zheng¹, Wei Cai¹, Liang Qiao¹, Yao Ying¹, *Shenglei Che¹ (1. Research Center of Magnetic and Electronic Materials, College of Materials Science and Engineering, Zhejiang University of Technology, Hangzhou 310014, China (China))

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[O9-5]

Low temperature densification of Nd(Fe,Mo)₁₂ nitrided samples

Gabriel Gomez Eslava¹, Patricia de Rango², *Sorana Luca¹ (1. Univ. Grenoble Alpes, CEA, Liten, F-38000 Grenoble (France), 2. Univ. Grenoble Alpes, CNRS, Institut Néel, 38000 Grenoble (France))

Oral | Material, processing, and characterization

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[O10] Sm-based Magnets

Session Chair: Prof. Satoshi Sugimoto (Tohoku University)

📌 Invited

10:55 AM - 11:15 AM JST | 1:55 AM - 2:15 AM UTC

[O10-1]

Phase transition in Sm-Co and its interesting phenomena

*Hubin Luo¹, Zhen Zhao¹, Niuniu Wang¹, Yun Li¹, Lei Liu¹, Yong Ding¹, Renjie Chen¹, Jian Zhang¹, Izabela Szlufarska², J. Ping Liu³, Baogen Shen⁴, Aru Yan¹ (1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences (China), 2. University of Wisconsin-Madison (United States of America), 3. University of Texas at Arlington (United States of America), 4. Institute of Physics, Chinese Academy of Sciences (China))

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[O10-2]

Composition dependence on magnetic properties and phase changes of TbCu₇-type Sm-Fe-Co-Nb-B alloys

*Masashi MATSUURA¹, Shinya SAKURADA², Satoshi SUGIMOTO¹ (1. Tohoku University (Japan), 2. Toshiba (Japan))

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[O10-3]

Study of magnetization reversal and magnetic hardening in SmCo₅ single crystal magnet

*Alex Aubert¹, Hongguo Zhang^{1,2}, Fernando Maccari¹, Christian Dietz³, Ming Yue², Konstantin Skokov¹, Oliver Gutfleisch¹ (1. Functional Materials, TU Darmstadt (Germany), 2. Faculty of Materials and Manufacturing, Beijing University of Technology (China), 3. Physics of Surfaces, TU Darmstadt (Germany))

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[O10-4]

Preparation of magnetically alignable Sm-Co alloy nanoparticles by wet-jet milling

*Kwangjae Park¹, Yusuke Hirayama¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

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[O10-5]

Effects of 1:5H-type Cu-rich phase around grain boundary on cell boundary phase and squareness of the demagnetization curve in sintered Sm₂Co₁₇-type magnets

*Chuanghui Dong¹, Lei Liu¹ (1. Ningbo Institute of Materials Technology & Engineering, CAS (China))

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[O11] Emerging Magnets

Session Chair: Dr. Konstantin Skokov (Technical University of Darmstadt)

📌 Invited

1:30 PM - 1:50 PM JST | 4:30 AM - 4:50 AM UTC

[O11-1]

Origin of high coercivity in post-sinter annealed Cu-doped $\text{Sm}(\text{Fe,Ti,V})_{12}$ -based sintered magnets

*JIASHENG ZHANG¹, Xin Tang¹, Tadakatsu OHKUBO¹, Kazuhiro Hono¹, SEPEHRI-AMIN Hossein¹ (1. National Institute for Materials Science (Japan))

1:50 PM - 2:05 PM JST | 4:50 AM - 5:05 AM UTC

[O11-2]

The effect Ag on phase transformation and magnetic properties in SmFe_{12} -based composition

Maria Takeuchi¹, Aaron Dextre Zamalloa¹, Esmaeil Adabifiroozjaei², Leopoldo Molina-Luna², Oliver Gutfleisch¹, *Pelin Tozman¹ (1. Functional Materials, Institute of Materials Science, Technische Universität Darmstadt, 64287 Darmstadt (Germany), 2. Advanced Electron Microscopy Division, Institute of Material Science, Technical University of Darmstadt, 64287 Darmstadt (Germany))

2:05 PM - 2:20 PM JST | 5:05 AM - 5:20 AM UTC

[O11-3]

Additive Manufacturing of Hard Magnetic Materials $\text{Nd}_2\text{Fe}_{14}\text{B}$ and $\text{Sm}(\text{Fe,Ti,V})_{12}$

*Alexey S. Volegov^{1,2}, Sergey V. Andreev¹, Oksana A. Golovnia¹, Aleksandra A. Golubyatnikova¹, Ilia A. Ivanov¹, Viktoria E. Maltseva¹, Dmitriy S. Neznakhin¹, Andrey V. Protasov^{1,2}, Nadezhda V. Selezneva¹, Elena A. Stepanova¹, Arkadiy N. Shalaginov¹ (1. UrFU (Russia), 2. IMP UB RAS (Russia))

2:20 PM - 2:35 PM JST | 5:20 AM - 5:35 AM UTC

[O11-4]

In-Depth investigation of the sub-micronic equiaxed grain microstructure of a NdFeB permanent magnet fabricated by Laser Powder Bed Fusion

*Aymeric Wolz¹, Jean-Paul Garandet^{1,2}, Camille Flament¹, Olivier Tosoni¹ (1. CEA (French Alternative Energies and Atomic Energy Commission) (France), 2. UGA (Grenoble Alpes University) (France))

Oral | Material, processing, and characterization

🏛 Wed. Jul 30, 2025 2:55 PM - 5:00 PM JST | Wed. Jul 30, 2025 5:55 AM - 8:00 AM UTC 🏛 Convention Hall(300, 3F)

[O12] RE-free Magnets

Session Chair: Prof. Yukiko Takahashi(National Institute for Materials Science)

💎 Invited

2:55 PM - 3:15 PM JST | 5:55 AM - 6:15 AM UTC

[O12-1]

Do we really need a gap magnet?

*J. M. D. Coey¹ (1. Trinity College Dublin, Ireland (Ireland))

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[O12-2]

Rare-earth free MnBi magnets: recent developments in combining severe plastic deformation with thermomagnetic processing

*K.S. Anand¹, Martin Kraus¹, Stefan Wurster¹, Michael Meindlhumer², Andrea Bachmaier¹ (1. Erich Schmid Institute, Austrian Academy of Sciences (Austria), 2. Department of Materials Science, Montanuniversität Leoben (Austria))

3:30 PM - 3:45 PM JST | 6:30 AM - 6:45 AM UTC

[O12-3]

Hot compacted MnAl-type magnets: Bi-bonding and corrosion response

*Semih Ener¹, Fernando Maccari¹, Konstantin P. Skokov¹, Oliver Gutfleisch¹ (1. Functional Materials, Technical University of Darmstadt (Germany))

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[O12-4]

Discovery of Stable Tetragonal Phase in Mn-Al-Cu Ternary System

*Tomohito Maki¹, Naoki Hashimoto², Xiao Xu², Toshihiro Omori², Ryosuke Kainuma² (1. Proterial, Ltd. (Japan), 2. Tohoku Univ. (Japan))

4:00 PM - 4:15 PM JST | 7:00 AM - 7:15 AM UTC

[O12-5]

High Pressure Consolidation for advanced Ferrite Permanent Magnets

*César de Julian Fernandez¹, Davide Delmonte¹, Alessandro Gerace⁶, Blaž Belec³, Beatrice Muzzi^{2,6}, Martin Albino^{2,6}, Riccardo Cabassi¹, Edmondo Giglioli¹, Adrian Quesada⁵, Franca Albertini¹, Petra Jenus⁴, Claudio Sangregorio² (1. Institute of Materials for Electronics and Magnetism - CNR (Italy), 2. Institute of Chemistry of OrganoMetallic Compounds (Italy), 3. University of Nova Gorica (Slovenia), 4. Dept. Nanostructured Materials, Jožef Stefan Institute (Slovenia), 5. Institute of Ceramics and Glasses - CSIC (Spain), 6. Dept. of Chemistry "U. Schiff", University of Florence and INSTM (Italy))

4:15 PM - 4:30 PM JST | 7:15 AM - 7:30 AM UTC

[O12-6]

Tailoring the Magnetic Properties of Nanostructured Ce- and Mn-substituted Sr-Hexaferrite

*Adrian Fernandez-Calzado¹, Ester M. Palmero¹, Darko Makovec², Alberto Bollero¹ (1. IMDEA Nanoscience (Spain), 2. Jožef Stefan Institute (Slovenia))

💎 Plenary

4:30 PM - 5:00 PM JST | 7:30 AM - 8:00 AM UTC

[O12-7]

Nd-Fe-B magnets: Young researchers innovate and veterans improve.

*Masato Sagawa¹ (1. Daido Steel Co., Ltd. (Japan))

Thu. Jul 31, 2025

Oral | Material, processing, and characterization

 Thu. Jul 31, 2025 9:00 AM - 10:30 AM JST | Thu. Jul 31, 2025 12:00 AM - 1:30 AM UTC  Convention Hall(300, 3F)**[O13] Thin Films & High-throughput Experiments**

Session Chair: Prof. Satoshi Okamoto (Tohoku University)

 Invited

9:00 AM - 9:20 AM JST | 12:00 AM - 12:20 AM UTC

[O13-1]

Thin film combinatorial studies of hard magnetic materials

*Nora M. Dempsey¹ (1. Institut Néel, CNR (France)) Invited

9:20 AM - 9:40 AM JST | 12:20 AM - 12:40 AM UTC

[O13-2]

Thin film model study for developing new permanent magnetic material

*Yukiko K Takahashi¹ (1. NIMS (Japan)) Invited

9:40 AM - 10:00 AM JST | 12:40 AM - 1:00 AM UTC

[O13-3]

Magnetic Hardening in Low-Dimensional Magnets

*J.Ping Liu¹ (1. University of Texas at Arlington (United States of America))

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[O13-4]

Enhancement of thermal stability of Sm(Fe-Co)₁₂-B thin films by cap layer deposition and post-annealing*Yuichi Mori¹, Soga Nakatsuka¹, Masaaki Doi¹, Toshiyuki Shima¹ (1. Tohoku Gakuin University (Japan))

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[O13-5]

A high throughput study of element substitution in NdFeB-based films combined with heavy rare-earth diffusion

*William Rigaut¹, Pierre Le Berre¹, Lukas Fink¹, Richard Haettel¹, Stephane Grenier¹, Alex Kovacs², Harald Oezelt², Thomas Schrefl², Thibaut Devillers¹, Nora M. Dempsey¹ (1. Univ. Grenoble Alpes, CNRS, Institut NEEL (France), 2. Department for Integrated Sensor Systems, University for Continuing Education Krems (Austria))

Oral | Theory and modeling:

📅 Thu. Jul 31, 2025 10:50 AM - 12:10 PM JST | Thu. Jul 31, 2025 1:50 AM - 3:10 AM UTC 🏛️ Convention Hall(300, 3F)

[O14] Theory & Simulations

Session Chair: Prof. Thomas Schrefl(Christian Doppler Laboratory for Magnet design through physics informed machine learning)

◆ Invited

10:50 AM - 11:10 AM JST | 1:50 AM - 2:10 AM UTC

[O14-1]

Micromagnetic and reduced-order model simulations of the impact of microstructural defects on the coercivity of recycled Nd₂Fe₁₄B magnets

*Johann Fischbacher¹, Thomas Schrefl^{1,2} (1. Department for Integrated Sensor Systems, University for Continuing Education Krems (Austria), 2. Christian Doppler laboratory for magnet design through physics-informed machine learning, University for Continuing Education Krems (Austria))

11:10 AM - 11:25 AM JST | 2:10 AM - 2:25 AM UTC

[O14-2]

Micromagnetic Simulations of Hot-deformed Nd-Fe-B Magnets Subjected to Eutectic Grain Boundary Diffusion Process

*Anton Bolyachkin¹, Xin Tang¹, Nikita Kulesh¹, Hossein Sepehri-Amin¹ (1. National Institute for Materials Science (Japan))

11:25 AM - 11:40 AM JST | 2:25 AM - 2:40 AM UTC

[O14-3]

Grain Shape and crystal reconstruction prediction of magnetic Nanoparticles

*Gino Hrkac¹, Hao Zhang¹, Sepheri Amin Hussein² (1. University of Exeter (UK), 2. NIMS (Japan))

11:40 AM - 11:55 AM JST | 2:40 AM - 2:55 AM UTC

[O14-4]

Phase-field simulation of liquid-phase sintering coupled with a CALPHAD database of Nd-Fe-B-Cu system

*Akimitsu Ishii¹, Toshiyuki Koyama^{1,2}, Taichi Abe¹, Machiko Ode¹ (1. National Institute for Materials Science (Japan), 2. Nagoya University (Japan))

11:55 AM - 12:10 PM JST | 2:55 AM - 3:10 AM UTC

[O14-5]

First-Principles Calculation of Magnetocrystalline Anisotropy in Rare-Earth-Containing RE₂Fe₁₄B Alloys

*Haruki Okumura¹, Tetsuya Fukushima¹, Taro Fukazawa¹, Takashi Miyake¹, Hisazumi Akai², Masako Ogura³ (1. AIST (Japan), 2. Osaka Univ. (Japan), 3. LMU Munich (Germany))

Oral | Theory and modeling:

📅 Thu. Jul 31, 2025 1:30 PM - 2:45 PM JST | Thu. Jul 31, 2025 4:30 AM - 5:45 AM UTC 🏛️ Convention Hall(300, 3F)

[O15] AI & Machine Learning I

Session Chair: Prof. Gino Hrkac (University of Exeter)

◆ Plenary

1:30 PM - 2:00 PM JST | 4:30 AM - 5:00 AM UTC

[O15-1]

Artificial Intelligence Assisted Optimization of Permanent Magnets

*Thomas Schrefl¹, Johann Fischbacher², Harald Oezelt², Alexander Kovacs², Qais Ali¹, Clemens Wager¹, Felix Lasthofer¹, Hyuga Hosoi³, Yusuke Umetani³, Akihito Kinoshita³, Masao Yano³, Noritsugu Sakuma³, Akira Kato³, Tetsuya Shoji³ (1. Christian Doppler Laboratory for Magnet design through physics informed machine learning (Austria), 2. Department for Integrated Sensor Systems, University for Continuing Education Krems (Austria), 3. Advanced Materials Engineering Division, Toyota Motor Corporation (Japan))

2:00 PM - 2:15 PM JST | 5:00 AM - 5:15 AM UTC

[O15-2]

The Possibility of New Complex Magnet Materials

*Jeff Snyder¹ (1. ARPA-E and Northwestern University (United States of America))

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[O15-3]

Deep-learning-assisted micromagnetic model development for Ga-doped Nd-Fe-B magnet

*Nikita Kulesh¹, Anton Bolyachkin¹, Xin Tang¹, Hajime Nakamura², Tadakatsu Ohkubo¹, Hossein Sepehri-Amin¹ (1. National Institute for Materials Science (Japan), 2. Shin-Etsu Chemical Co., Ltd. (Japan))

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[O15-4]

Artificial Intelligence to support Permanent Magnet Research and Development – Intrinsic Magnetic Properties and Microstructure Analysis

*Gerhard Schneider¹, Amit Kumar Choudhary¹, Andreas Jansche¹, Rajkumar Varaganti¹, Dominic Hohs¹, Dagmar Goll¹ (1. Aalen University (Germany))

Oral | Theory and modeling:

📅 Thu. Jul 31, 2025 3:05 PM - 4:10 PM JST | Thu. Jul 31, 2025 6:05 AM - 7:10 AM UTC 🏛️ Convention Hall(300, 3F)

[O16] AI & Machine Learning II

Session Chair: Dr. Anton Bolyachkin(National Institute for Materials Science)

📌 Invited

3:05 PM - 3:25 PM JST | 6:05 AM - 6:25 AM UTC

[O16-1]

Enhancing Research and Development Efficiency through Decision-Making Based on Experimental Data Feature Extraction

*Masao Yano¹, Kazuho Saeki¹, Kazuto Ide¹, Toshihiro Nakae¹, Tetsuya Shoji¹ (1. Toyota Motor Corporation (Japan))

3:25 PM - 3:40 PM JST | 6:25 AM - 6:40 AM UTC

[O16-2]

Accelerated development of thermally stable Nd-Fe-B magnets with light rare-earth elements and their synergetic effects to temperature stability with Co

Xinyi Ji¹, *Lanting Zhang¹, Hong Zhu¹, Zhaozhe Zhong², Jian Liu², Zhanji Dong³, Zhongjie Peng³, Kaihong Ding³ (1. Shanghai Jiao Tong University (China), 2. Toyota Motor Technical Research and Service (Shanghai) Co., Ltd (China), 3. Yantai Dongxing Magnetic Materials Inc (China))

3:40 PM - 3:55 PM JST | 6:40 AM - 6:55 AM UTC

[O16-3]

Graph Neural Networks to Predict Coercivity of Hard Magnetic Microstructures

*Heisam Adam Moustafa¹, Qais Ali², Leonie Breth¹, Alexander Kovacs¹, Thomas Schrefl^{1,2}, Lukas Fink³, William Rigaut³, Pierre Le-Berre³, Thibaut Devillers³, Nora M. Dempsey³, Harald Oezelt¹ (1. Department for Integrated Sensor Systems, University for Continuing Education Krems (Austria), 2. Christian Doppler Laboratory for magnet design through physics informed machine learning (Austria), 3. Université Grenoble Alpes, CNRS, Grenoble INP, Institut Néel (France))

3:55 PM - 4:10 PM JST | 6:55 AM - 7:10 AM UTC

[O16-4]

Optimization of a Permanent Magnet with Uncertainty Control

*Clemens Wager¹, Thomas Schrefl^{1,2}, Alexander Kovacs², Harald Özelt², Claas Fillies², Qais Ali¹, Felix Lasthofer², Masao Yano³, Noritsugu Sakuma³, Akihito Kinoshita³, Tetsuya Shoji³, Akira Kato³, Hayate Yamano³ (1. Christian Doppler Laboratory for magnet design through physics informed machine learning (Austria), 2. Department of Integrated Sensor Systems, University for Continuing Education Krems, Wiener Neustadt, Austria (Austria), 3. Advanced Materials Engineering Division, Toyota Motor Corporation, Susono, Japan (Japan))