

Sun. Jul 27, 2025

Others | Others

 Sun. Jul 27, 2025 4:00 PM - 6:00 PM JST | Sun. Jul 27, 2025 7:00 AM - 9:00 AM UTC  Multi-Purpose Hall(1F)
[Registration & Welcome Reception] Registration & Welcome Reception

4:00 PM - 6:00 PM JST | 7:00 AM - 9:00 AM UTC
[1B-1600-1add]
Registration

Mon. Jul 28, 2025

Oral | Others

📅 Mon. Jul 28, 2025 8:30 AM - 9:00 AM JST | Sun. Jul 27, 2025 11:30 PM - 12:00 AM UTC 🏛️ Convention Hall(300, 3F)

[Welcome Address] Welcome Address

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

📅 Mon. Jul 28, 2025 10:55 AM - 12:20 PM JST | Mon. Jul 28, 2025 1:55 AM - 3:20 AM UTC 🏛️ Convention Hall(300, 3F)

[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))

12:05 PM - 12:20 PM JST | 3:05 AM - 3:20 AM UTC

[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

📅 Mon. Jul 28, 2025 1:30 PM - 3:05 PM JST | Mon. Jul 28, 2025 4:30 AM - 6:05 AM UTC 🏛️ Convention Hall(300, 3F)

[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 Boettler¹, 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

🏛 Mon. Jul 28, 2025 3:25 PM - 4:30 PM JST | Mon. Jul 28, 2025 6:25 AM - 7:30 AM UTC 🏛 Convention Hall(300, 3F)

[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))

Poster | Material, processing, and characterization

📅 Mon. Jul 28, 2025 4:30 PM - 6:00 PM JST | Mon. Jul 28, 2025 7:30 AM - 9:00 AM UTC 🏢 Red zone, Conference rooms 101 and 102(1F)

[P1] RE-Fe-B Magnets

Session Chair: Dr. Imants Dirba (Technical University of Darmstadt, Germany), Dr. Tae-Hoon Kim (Korea Institute of Materials Science, Korea)

[P1-1]

High performance HREE-free hot-deformed Nd-Fe-B magnets by Nd-Cu grain boundary diffusion

*Kazumasa Fujimura¹, Takanori Kajiwar¹, Takashi Oikawa¹, Hiroshi Miyawaki² (1. Corporate R&D center, Daido Steel Co., Ltd. (Japan), 2. Material solution dept., Daido Steel Co., Ltd. (Japan))

[P1-2]

Development of Heavy Rare-Earth, Co-free Nd-Fe-B Injection Molded Anisotropic Bonded Magnet with High Corrosion Resistance

*Kazuaki Shimba¹, Takumi Otaki¹, Masaya Shintaku¹, Satoshi Sugimoto², Hironari Mitarai¹ (1. Aichi Steel Corporation (Japan), 2. Department of Management Science and Technology, Graduate School of Engineering, Tohoku University (Japan))

[P1-3]

Impact of the RFe₂ phase in Ce-containing magnets on annealing optimization and magnetic performance

Fengqiao Liu¹, *Yunqiao Wang¹, Wei Zhu¹, E Niu¹, Zhan Wang¹, Xiaolei Rao¹, Boping Hu¹ (1. Beijing Zhong Ke San Huan Research (China))

[P1-4]

Coercivity Enhancement and Synergistic Suppression of CeFe₂ Phase in Ce Magnets with High Ce Content

*Minggang Zhu^{1,2}, Xiaolong Song², Qisong Sun², Yikun Fang², Wei Li² (1. AT&M North Technology Co.,Ltd (China), 2. Central Iron and Steel Research Institute (China))

[P1-5]

Enhanced Magnetic Properties and Microstructural Characterization of Hot-Deformed (Ce,L_a)-Fe-B Magnets with Eutectic Alloy Incorporation

*Kyungmi Lee¹, Ye Ryeong Jang¹, Wooyoung Lee¹ (1. Yonsei Univ. (Korea))

[P1-6]

Simultaneous improvement in coercivity and remanence of (Nd, Pr)-ultra-saving Ce-substituted RE-Fe-B sintered magnets by grain boundary diffusion process using low-melting Nd-Cu-Al-Ga alloy

*Sujin Lee¹, Sumin Kim¹, Tae-Hoon Kim¹, Kyoung-Hoon Bae², Dong-Hwan Kim², Jung-Goo Lee¹ (1. Korea Institute of Materials Science (Korea), 2. Star Group Ind. CO., Ltd. (Korea))

[P1-7]

Microstructural Optimization and Coercivity Enhancement in Nd-Ce-Fe-B Magnets through Grain boundary diffusion of Pr-La Mixed Alloy

*Ye Ryeong Jang¹ (1. Yonsei University (Korea))

[P1-8]

Hysteretic properties of (Nd,Ce,Tb)-(Fe,Co)-(Al,Cu,Ti)-B permanent magnets prepared by in-situ grain boundary diffusion

*Pavel Alexandrovich Prokofev¹, Natalia Borisovna Kolchugina¹, Nikolay Andreevich Dormidontov¹, Nickolay Vladimirovich Kudrevatykh², Anna Sregeevna Bakulina¹, Mark Vladimirovich Zheleznyi¹ (1. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences (Russia), 2. Ural Federal University named after the First President of the Russian Federation B. N. Yeltsin (Russia))

[P1-9]

Utilization of high-abundance rare earth elements in Tb-Cu-Al alloy for high efficient grain boundary diffusion of Nd-Fe-B magnets

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

[P1-10]

A macroscopic perspective on the sintered Nd-Fe-B magnets prepared by Tb grain boundary diffusion

*Jinghui Di¹, Hui Meng², Chaoyue Zhang³, Min Zou⁴ (1. Hangzhou Magmax Technology Co., Ltd. (China), 2. Hangzhou Foresee Group Holdings Co., Ltd. (China), 3. Hangzhou Kede Magnetic Components Co., Ltd. (China), 4. Lab Magnetics Inc. (United States of America))

[P1-11]

Regulation of Grain Boundary Structure in NdFeCoB Magnets through Grain Boundary Diffusion of DyAlCu Alloy

*Shengzhi Dong¹, Haibo Feng¹, Jing Liu¹, Jiateng Zhang¹, Wei Li¹ (1. Central Iron & Steel Research Institute (China))

[P1-12]

Coercivity enhancement of Nd-Fe-B sintered magnet through grain boundary restructuring using Dy₈₀Ga₂₀ eutectic alloy

*PAULRAJ S¹, VIVEKANANDHAN P¹, VIJAYARAGAVAN G¹, SADHASHIVAM M², PRADEEP K. G.², PRABHU D¹, GOPALAN R¹ (1. Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials, Chennai – 600 113, Tamil Nadu, India (India), 2. Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras (IITM), Chennai – 600 036, Tamil Nadu, India (India))

[P1-13]

Nb assisted grain boundary pinning in Nd-Cu diffused Nd-Fe-B magnets for enhancing the Coercivity

Sivakumar Munibhaskar¹, Prabhu Delhi Babu², Pradeep KG¹, *Gopalan Raghavan² (1. Indian Institute of Technology, Madras, Chennai-600036 (India), 2. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), IITMadras Research Park, Chennai-600113 (India))

[P1-14]

Effects of trace elements on the grain boundary diffusion of sintered NdFeB magnets

*Chaochao Zeng¹, Jiayi He¹, Xichun Zhong¹, Hongya Yu¹, Zhongwu Liu¹ (1. School of Materials Science and Engineering, South China University Of Technology (China))

[P1-15]

Effect of Coating Methods on the Magnetic Properties of Grain Boundary Diffusion Processed Nd-Fe-B Sintered Magnets

*Jaehyuk Kim^{1,2}, Ye Ryeong Jang¹, Dong Hyun Lee⁴, Seong Chan Kim², Ju Young Beak², Donghwan Kim⁵, Sang Hyub Lee⁵, Sumin Kim⁶, Jong Wook Roh⁴, Dalhyun Do³, Dong Hwan Kim², Jeongmin Kim², Wooyoung Lee¹ (1.

Yonsei Univ. (Korea), 2. DGIST (Korea), 3. Keimyung Univ. (Korea), 4. Kyungpook National Univ. (Korea), 5. Star Group (Korea), 6. KIMS (Korea))

[P1-16]

Magnetization reversal of core-shell structured grain of GBDP Nd-Fe-B sintered magnet

Minghe Liu¹, Shuai Cao¹, Xinlong Yang¹, Wenhe Liu¹, *Weixing Xia¹, Renjie Chen¹, Aru Yan¹, Wei Li¹ (1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences (China))

[P1-17]

Novel Aspects in Nd-Fe-B Grain Boundary Engineering: Integrating (Electro)chemistry and Materials Science

*Kristina Zuzek¹, Tomaz Tomse¹, Mihaela Rebernik¹, Fabian Burkhardt¹, Amit Mishra¹, Crt Saksida¹, Laurence Schieren², Carlo Burkhardt², Johann Fischbacher³, Thomas Schrefl³, Sourur Semsari Parapari¹, Saso Sturm (1. Jozef Stefan Institute (Slovenia), 2. Pforzheim University (Germany), 3. Danube University Krems (Austria))

[P1-19]

Features of the magnetization reversal processes in sintered permanent magnets Nd-Fe-B and Sm-Co type

*Andrey Urzhumtsev^{1,2}, Viktoria Maltseva¹, Alexey Volegov¹ (1. Ural Federal University (Russia), 2. POZ-Progress LLC (Russia))

[P1-20]

Potential of Cryogenic Treatment Applications on Rare-Earth-Based Functional Magnetic Materials

*Rafael Gitti Tortoretto Fim¹, Matic Jovičević-Klug¹, Dierk Raabe², Patricia Jovičević-Klug³ (1. Sustainable Magnets and Recycling Group, Physics of Microstructure and Alloy Design Department, Max-Planck-Institute for Sustainable Materials (MPI-SusMat), Düsseldorf (Germany), 2. Physics of Microstructure and Alloy Design Department, Max-Planck-Institute for Sustainable Materials (MPI-SusMat), Düsseldorf (Germany), 3. Surface Science for Future Materials Group, Department of Interface Chemistry and Surface Engineering, Max-Planck-Institute for Sustainable Materials (MPI-SusMat), Düsseldorf (Germany))

Poster | Material, processing, and characterization

 Mon. Jul 28, 2025 4:30 PM - 6:00 PM JST | Mon. Jul 28, 2025 7:30 AM - 9:00 AM UTC  Green zone, Conference rooms 101 and 102(1F)

[P1] RE-Fe-B Magnets

Session Chair: Dr. Imants Dirba (Technical University of Darmstadt, Germany), Dr. Tae-Hoon Kim (Korea Institute of Materials Science, Korea)

[P1-21]

Coercivity enhancement of HDDR anisotropic Nd-Fe-B magnetic powder

*Jingzhi Han¹, Hui-Dong Qian¹, Peng Shen¹, Tao Zhu¹, Qing Xu¹, Qiang Gao¹, Shunquan Liu¹, Weixing Xia³, Shuai Guo³, Wenyun Yang¹, Jinbo Yang^{1,2}, Yingchang Yang¹ (1. Institute of Condensed Matter and Material Physics, School of Physics, Peking University (China), 2. State Key Laboratory for Mesoscopic Physics and School of Physics, Peking University (China), 3. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences (China))

[P1-22]

USE THE HDDR AND GBDP APPROUCHES TO PRODUCE HOT-DEFORMED Nd-Fe-B MAGNETS

*Sujuan Wang^{1,2,4}, Ihor I. Bulyk^{1,2,4}, Heping Zhu^{1,2,4}, Munan Yang^{1,2,3,4} (1. Jiangxi Province Key Laboratory of Magnetic Metallic Materials and Devices (China), 2. National Rare Earth Functional Materials Innovation Center (China), 3. Ganjiang Innovation Academy, Chinese Academy of Science (China), 4. Jiangxi University of Science and Technology (China))

[P1-23]

Nd₂Fe₁₄B MAGNETS SINTERED BY THE HDDR PROCESS: the first results

*Renhui Liu^{1,2,3}, Ihor I. Bulyk^{1,2,3}, Heping Zhu^{1,2,3}, Munan Yang^{1,2,3,4} (1. Jiangxi University of Science and Technology (China), 2. Jiangxi Province Key Laboratory of Magnetic Metallic Materials and Devices (China), 3. National Rare Earth Functional Materials Innovation Center (China), 4. Ganjiang Innovation Academy, Chinese Academy of Science (China))

[P1-24]

Influence of the Nd-rich phase when processing Nd-Fe-B through the Hydrogen Ductilisation Process (HyDP)

*Patrick Powell¹, Oliver Peter Brooks¹, Viktoria Kozak¹, Safiyah Hussain¹, Allan Walton¹ (1. University of Birmingham (UK))

[P1-25]

Synthesis of Fine (Nd,Ce)₂Fe₁₄B Powders *via* the Reduction-Diffusion Process For Fabricating Ce-substituted Nd-Fe-B Sintered Magnets

*Jeong Hyun Kim¹, Kyung-Shik Yoon¹, Hyeon Seong Kim¹, Hee Yeon Jeon¹, Tae-Hoon Kim², Young-In Lee¹ (1. Seoul National University of Science and Technology (Korea), 2. Korea Institute of Materials Science (Korea))

[P1-26]

A Novel Methods to Fabricate Fine-grained Nd-Fe-B Sintered Magnets: Reduction-diffusion & Pressless Process

*Sumin Kim¹, So-Yeon Kim¹, Jae-Ho Byun¹, Tea-Hoon Kim¹, Jeong-Goo Lee¹ (1. Korea Institute of Materials Science (Korea))

[P1-27]

Fabrication of fine-grained Nd-Fe-B anisotropic magnets using single-crystalline particles synthesized by reduction-diffusion process

*Keunki Cho¹, Seol-mi Lee¹, Sumin Kim¹, Tae-Hoon Kim¹, Jung-Goo Lee¹ (1. Department of Magnetic Materials, Korea Institute of Materials Science (Korea))

[P1-28]

Recycling of Waste Nd-Fe-B Sintered Magnets *via* Ca-reduction and two-step washing process

*Seol-mi Lee¹, Tae-Hoon Kim¹, Ki-Suk Lee², Sang-hyub Lee³, Dong-Hwan Kim³, Jung-Goo Lee¹ (1. Korea Institute of Materials Science (KIMS) (Korea), 2. Ulsan National Institute of Science and Technology (UNIST) (Korea), 3. Star Group Ind. CO., Ltd. (Korea))

[P1-29]

Remanufacture of sintered NdFeB magnets via recasting high dysprosium content end-of-life magnets

*Oliver Peter Brooks¹, Cem Uyumaz¹, Jospeh Gresle Farthing², Abeshaa Mahendran², Rob Arnold², Muhammad Awais¹, Vicky Mann¹, Richard Stuart Sheridan¹, Allan Walton¹ (1. University of Birmingham (UK), 2. HyProMag Limited (UK))

[P1-30]

Magnetic properties and recovery rate of recycling hundred-kilogram-scale NdFeB sintered magnets with the improved short-loop recycling process

*Chih-Chieh Mo¹, Chih-Cheng Kuan¹, Yung-Hsiang Wang¹ (1. SPIN Sustainable Energy Industry Corporation, Hsinchu Country 30352, Taiwan (Taiwan))

[P1-31]

On the Impact of Particle Size and Filling Density on the Magnetic Texture of Recycled Nd-Fe-B Magnets obtained via Pressless Processing

*Wagner Costa Macedo¹, Leonardo Antunes¹, Caio Ferreira Sampietro¹, Marcelo Augusto Rosa¹, Luis Torres Quispe¹, Paulo Wendhausen¹ (1. Federal University of Santa Catarina (Brazil))

[P1-32]

Cyclone separation of hydrogen processed NdFeB magnets for improved properties

*Viktoria Kozak¹, Lydia Pickering¹, Muhammad Awais¹, Abeshaa Mahendran², Jovey Farthing², Rob Arnold², Allan Walton¹ (1. University of Birmingham (UK), 2. Hypromag Ltd (UK))

[P1-33]

Study of microstresses in sintered NdFeB magnets and their effects on magnetic properties

*Shengen Guan¹, Zihao Wang¹, Ning Wang¹, Zhaohong Feng¹, Xuexu Gao¹, Jiheng Li¹, Zhimeng Guo¹, Xiaoqian Bao¹ (1. University of Science and Technology Beijing (China))

[P1-34]

Development of Nd-Fe-B multi-pole magnetized ring magnets with high magnetic properties

*Haruhiro Komura¹, Akihiro Yamane¹, Kentaro Hanashima¹, Toshinori Suzuki¹, Yu Okawara¹ (1. MINEBEA MITSUMI Inc. (Japan))

[P1-35]

Magnetization reversal behavior of die-upset Nd-Fe-B magnets with heterogenous microstructure

*HARIM CHOI^{1,2}, Makoto KOBASHI¹, Hossein Sepehri-Amin³, Yusuke HIRAYAMA² (1. Nagoya university (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. National Institute for Materials Science (Japan))

[P1-36]

Effect of gallium alloying on hysteresis properties of the Re-(Fe,Co)-Ga-B permanent magnets

*Andrey Vladimirovich Protasov¹, Aleksandra Romanovna Soltus¹, Denis Aleksandrovich Kolodkin¹, Ludmila Alekseevna Stashkova¹ (1. M.N. Mikheev Institute of Metal Physics of the Ural Branch of the Russian Academy of Sciences (Russia))

[P1-37]

Coercivity enhancement of hot deformed NdFeB magnets by doping multicomponent Ce-Tb-Pr-Al-Zn alloys

*HUANG WEI CHANG¹, P.H. Lin¹, Y.J. Wong¹, W.J. Wong¹, W.C. Chang¹ (1. Department of Physics, National Chung Cheng University (Taiwan))

[P1-38]

Improvement of H_k and squareness in d -HDDR-treated Nd-Fe-B powders prepared using modified starting powder

*Takashi Horikawa^{1,2}, Masao Yamazaki¹, Masashi Matsuura², Satoshi Sugimoto² (1. Aichi Steel Corporation (Japan), 2. Tohoku University (Japan))

Poster | Applications: Motors and others

 Mon. Jul 28, 2025 4:30 PM - 6:00 PM JST | Mon. Jul 28, 2025 7:30 AM - 9:00 AM UTC  Blue zone, Conference rooms 101 and 102(1F)

[P1] Applications

Session Chair: Dr. Imants Dirba (Technical University of Darmstadt, Germany), Dr. Tae-Hoon Kim (Korea Institute of Materials Science, Korea)

[P1-39]

Dynamic evaluation in motors of variable magnetic flux magnets

*Kenji Takeda¹, R. Fujiwara¹, T. Shinji¹, S. Miyazaki¹, T. Kajita¹, Y. Enokido¹, K. Akatsu² (1. Technology and Intellectual Property HQ, TDK Corporation (Japan), 2. Department of Faculty of Engineering, Yokohama National University (Japan))

[P1-40]

High Magnetic Flux Rotor Core for IPM Motor through Partial Non-Magnetic Improvement of Silicon Steel

*Norihiko Hamada¹, Hironari Mitarai¹, Katsunari Oikawa², Satoshi Sugimoto² (1. Aichi Steel Corporation (Japan), 2. Tohoku University (Japan))

[P1-41]

Development of 200,000rpm SPM small motor using rare earth anisotropic bonded magnets

Takenobu Yoshimatsu¹, *Chisato Mishima¹, Eiki Kikuchi¹, Yoshinobu Honkura¹, Junichi Asama² (1. MagDesign corporation (Japan), 2. Shizuoka University (Japan))

[P1-42]

A new magnetization methods that supports high-performance magnets applied to IPMSMs for EV/HEV and new motors such as spoke type motor

*Michitaka Hori¹, Naoya Tomita¹, Kazuki Akiyama¹ (1. Nihon Denji Sokki Co., LTD. (Japan))

[P1-43]

Advantages of Manufacturing Radially Oriented Ring Magnets through Hot Forming and the Impact on Electrical Machines

*Martin Krengel¹, Stefan Schmülling¹, Lukas Schäfer², Semih Ener², Burçak Ekitli², Oliver Gutfleisch² (1. WILO SE (Germany), 2. TU Darmstadt / Functional Materials (Germany))

[P1-44]

Design Considerations for Post Assembly Magnetising of Permanent Magnet Rotors

*Matthew Joseph Swallow¹ (1. Bunting Magnetics Ltd (UK))

[P1-45]

Formation of ferromagnetic clusters affecting the first-order phase transition in off-stoichiometric Fe-Rh

*Alex Aubert¹, Konstantin Skokov¹, Andrei Rogalev², Alisa Chirkova¹, Benedikt Beckmann¹, Fernando Maccari¹, Fabrice Wilhelm², Esmaeil Adabifiroozjaei³, Leopoldo Molina-Luna³, Gabriel Gomez⁴, Benedikt Eggert⁴, Katharina Ollefs⁴, Heiko Wende⁴, Oliver Gutfleisch¹ (1. Functional Materials, TU Darmstadt (Germany), 2. ESRF (France), 3. Advanced Electron Microscopy, TU Darmstadt (Germany), 4. CENIDE, University of Duisburg-Essen (Germany))

[P1-46]

A Compact 4 Tesla Permanent Magnet Field Source with Reduced Structural Complexity

*Min Zou¹, Hui Meng², Yan Shen³, George Mizzell⁴, Christina H Chen³ (1. Lab Magnetism Inc., San Jose, CA, USA (United States of America), 2. Foresee Group, Hangzhou, Zhejiang, China (China), 3. Quadrant Solutions Inc., San Jose, CA, USA (United States of America), 4. SuperMagnetMan, Pelham, AL, USA (United States of America))

[P1-47]

Development strategy of Fe-Cr-Co alloy powder for high-performance microwave absorbers and noise suppression sheets

*Saijian Ajia¹, Mitsuharu Sato^{1,2}, Hirotaka Asa^{1,3}, Tomoki Ishijima^{1,4}, Yasushi Endo¹, Masashi Matsuura¹, Satoshi Sugimoto¹ (1. Graduate School of Engineering, Tohoku University (Japan), 2. Present: Research Institute for Electromagnetic Materials (Japan), 3. Present: PwC Consulting LLC (Japan), 4. Present: TDK Corporation (Japan))

[P1-48]

Development of RE₂(Fe,Co)₁₄B (RE = rare-earth) compounds for transverse thermoelectric applications

*Babu Madavali¹, Fuyuki Ando¹, Zulfa Hilmi Kautsar¹, Takamasa Hirai¹, Ken-ichi Uchida^{1,2}, Xin Tang¹, Hossein Sepehri-Amin¹ (1. National Institute for Materials Science (NIMS) (Japan), 2. The University of Tokyo, Kashiwa (Japan))

[P1-49]

Coercivity mechanism of rare earth-free Cr substituted Mn_{1-x}Cr_xAlGe for “thermoelectric permanent magnet” applications

*Andres Martin-Cid¹, Babu Madavali¹, Fuyuki Ando¹, Yuya Sakuraba¹, Ken-ichi Uchida^{1,2}, Hossein Sepehri-Amin¹ (1. National Institute for Materials Science (NIMS) (Japan), 2. Department of Advanced Materials Science, Graduate School of Frontier Sciences, The University of Tokyo (Japan))

Poster | Material, processing, and characterization

 Mon. Jul 28, 2025 4:30 PM - 6:00 PM JST | Mon. Jul 28, 2025 7:30 AM - 9:00 AM UTC  Yellow zone, Conference rooms 101 and 102(1F)

[P1] Processing, Characterization & Thin Films

Session Chair: Dr. Imants Dirba (Technical University of Darmstadt, Germany), Dr. Tae-Hoon Kim (Korea Institute of Materials Science, Korea)

[P1-50]

Optimization of Processing Parameters for High-Performance Anisotropic Bonded Magnets

*Ikenna C. Nlebedim¹, Xubo Liu¹, Parans Paranthaman² (1. Division of Critical Materials, Ames National Laboratory (United States of America), 2. Chemical Sciences Division, Oak Ridge National Laboratory (United States of America))

[P1-51]

Demagnetization Processes in Nd-Fe-B sintered and Ferrite Magnets derived from magnetic measurement and soft X-ray magnetic circular dichroism microscopy

*Yutaka Matsuura¹ (1. Research Institute for Applied Sciences (Japan))

[P1-52]

Anisotropy field measurement in hard magnets: evaluating current methodologies

*Alex Aubert¹, Konstantin Skokov¹, Oliver Gutfleisch¹ (1. Functional Materials, TU Darmstadt (Germany))

[P1-53]

Angular Dependence of Coercivity and Flux Loss under Tilted Field in Nd-Fe-B Sintered Magnet

*Hitoshi Yamamoto¹, Hirotohi Fukunaga² (1. Neoji-consul (Japan), 2. Nagasaki University (Japan))

[P1-54]

Pulsed Field Magnetometers - validating data generated by Self-Demagnetisation Field Function (SDFF) correction to create closed loop results from open loop measurements

*Robin Cornelius¹, Jian He², Jack Wade¹, Stuart Harwin¹, James Mckenzie¹ (1. Hirst Magnetic Instruments Ltd (UK), 2. National Institute of Metrology (China))

[P1-55]

Measuring initial curves and minor hysteresis loops for rare earth magnets using the Pulsed Field Magnetometer (PFM) system

*Robin Cornelius¹, Jack Wade¹, Stuart Harwin¹, James Mckenzie¹ (1. Hirst Magnetic Instruments Ltd (UK))

[P1-56]

Spectroscopic insights into the electronic structure of non-critical rare earth containing permanent magnets

*Benedikt Eggert¹, Alex Aubert², Philipp Kläßen¹, Janosch Tasto¹, Nathan Yutronkie³, Fabrice Wilhelm³, Andrei Rogalev³, Konstantin Skokov², Heiko Wende¹, Oliver Gutfleisch², Katharina Ollefs¹ (1. University of Duisburg-Essen (Germany), 2. Technical University of Darmstadt (Germany), 3. European Synchrotron Radiation Facility (France))

[P1-57]

Three-dimensional magnetic domain propagation of a Nd-Fe-B hot-deformed magnet

*Tomomi Suwa¹, Motohiro Suzuki², Tadakatsu Ohkubo³, Iriyama Takahiko⁴, Hiroshi Miyawaki⁴, Kaiki Takemura², Yusuke Akiyama², Takuya Taniguchi¹, Satoshi Okamoto^{1,3} (1. Tohoku University (Japan), 2. Kwansei Gakuin University (Japan), 3. National Institute for Materials Science (Japan), 4. Daido Steel Company, Limited (Japan))

[P1-58]

A New Perspective on Assessing the Magnetic Texture in Nd-Fe-B Magnets: The influence of coercivity

Luis Torres Quispe¹, *Wagner Costa Macedo¹, Marcelo Augusto Rosa¹, Leonardo Antunes¹, Apuniano Baldarrago-Alcántara¹, Paulo Wendhausen¹ (1. Federal University of Santa Catarina (Brazil))

[P1-59]

Temperature field variations during directional solidification of rare-earth large-size Tb-Dy-Fe magnetostrictive materials and their effect on growth orientation

*jiang ping xin¹, Jiheng Li¹, Xiaoqian Bao¹, Xuexu Gao¹ (1. USTB (China))

[P1-60]

Bioinspired Design, Fabrication, and Wing Morphing of 3D-Printed Magnetic Butterflies

Muhammad Bilal Khan¹, Kilan Schäfer¹, Florian Hofmann¹, Matthias Lutzi¹, Eduardo Sergio Oliveros-Mata², Oleksandr Pylypovskyi², Denys Makarov², *Oliver Gutfleisch¹ (1. Functional Materials, TU Darmstadt (Germany), 2. Institute of Ion Beam Physics and Materials Research Helmholtz-Zentrum Dresden-Rossendorf e.V. (Germany))

[P1-61]

Phase composition and magnetic properties of Nd(Pr)₂Fe₁₄B and (Sm,Zr)Fe₁₁Ti magnets produced by selective laser melting

Sergey Andreev¹, *Viktoria Maltseva¹, Dmitriy Neznakhin¹, Arkadiy Shalaginov¹, Andrey Urzhumtsev¹, Alexey Volegov¹ (1. Ural Federal University (Russia))

[P1-62]

Grain alignment by single track printing using anisotropic sintered Nd-Fe-B magnet as a substrate

Peishu Song¹, Zhenyuan Liu¹, Yan Li², Dan Han³, *Lanting Zhang¹ (1. Shanghai Jiao Tong University (China), 2. Inner Mongolia University of Science and Technology (China), 3. Inner Mongolia Research Institute of Shanghai Jiao Tong University (China))

[P1-63]

Microstructural Investigation of Nd-Fe-B Magnets Fabricated by Laser Powder Bed Fusion

*Hojeong Kim¹, Taesuk Jang², Du-Rim Eo³, Wooyoung Lee¹ (1. Yonsei university (Korea), 2. Sunmoon University (Korea), 3. KITECH (Korea))

[P1-64]

From Scrap to Bonded Magnet: Exploring Nanocrystalline Recycled Powders in Additive Manufacturing

*Marcelo Augusto Rosa¹, Gabriel Maia², Apuniano Baldarrago¹, Maximiliano Martins², Paulo Wendhausen¹ (1. UFSC (Brazil), 2. CDTN (Brazil))

[P1-65]

Enhancing the Printability of Nd-Fe-B Feedstocks for Laser Powder Bed Fusion

Marcelo Augusto Rosa¹, Apuniano Baldarrago¹, Arthur Mascheroni², José Maria Mascheroni², *Paulo Wendhausen¹ (1. UFSC (Brazil), 2. Alkimat (Brazil))

[P1-66]

Preparation of micromagnets via LIFT technique

*Masaki Nakano¹, Gakuto Tahara¹, Takuki Amiya¹, Akihiro Yamashita¹, Takeshi Yanai¹, Masaru Itakura², Kunihiro Koike³, Hirotooshi Fukunaga¹ (1. Nagasaki university (Japan), 2. Kyushu university (Japan), 3. Yamagata university (Japan))

[P1-67]

Sputtered high-coercivity CeCo thin film on glass substrate

Cheng-Yan Lee², Sea-Fue Wang², Huang-Wei Chang³, *An-Cheng Aidan Sun¹ (1. Yuan Ze University (Taiwan), 2. National Taipei University of Technology (Taiwan), 3. National Chung Cheng University (Taiwan))

[P1-68]

Growth of SmFe₁₂ thin films using MBE

*Uyanga Enkhnanan¹, Jargalan Narmandakh¹, Sangaa Deleg¹, Uranbaigal Enkhtur², Odkhuu Dorj², Sunglae Cho³ (1. Institute of Physics and Technology of Mongolian Academy of Sciences (Mongolia), 2. Incheon National University (Korea), 3. University of Ulsan (Korea))

[P1-69]

Development of data handling tools for high-throughput experiments

*Pierre Le Berre¹, William Rigaut¹, Wilfried Hortschitz², Santa Pile², Harald Oezelt², Samuel J. R. Holt^{3,4}, Swapneel A. Pathak^{3,4}, Hans Fangohr^{3,4,5}, Thomas Schrefl², Thibaut Devillers¹, Nora M. Dempsey¹ (1. Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, 38000 Grenoble (France), 2. Department for Integrated Sensor Systems, University for Continuing Education Krems, Wr. Neustadt (Austria), 3. Max Planck Institute for the Structure and Dynamics of Matter, Luruper Chaussee 149, 22761 Hamburg (Germany), 4. Center for Free-Electron Laser Science, Luruper Chaussee 149, 22761 Hamburg (Germany), 5. Faculty of Engineering and Physical Sciences, University of Southampton, Southampton SO17 1BJ (UK))

[P1-70]

Towards the high-throughput microstructural characterisation of compositionally graded NdFeB-based films

*Lukas Fink¹, William Rigaut¹, Pierre Le-Berre¹, Heisam Moustafa², Qais Ali², Leoni Breth², Thomas Schrefl², Harald Oezelt², Thibaut Devillers¹, Nora M. Dempsey¹ (1. 1 Université Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, 38000 Grenoble (France), 2. Department for Integrated Sensor Systems, University for Continuing Education Krems, 2700 Wr. Neustadt (Austria))

[P1-71]

Characterization of rare earth garnet [Eu₃Fe₅O₁₂/Tb₃Fe₅O₁₂]/Gd₃Ga₅O₁₂ (111) ([EuIG/TbIG]/GGG (111)) thin films

*Ko-Wei Lin¹, Guan-Hua Lu¹, Tai-Yi Chiu¹, Chi Wah Leung² (1. National Chung Hsing University (Taiwan), 2. The Hong Kong Polytechnic University (China))

[P1-73]

Effect of Ir addition on the crystal structure and magnetic properties for Mn-Ga thin films

*Yuto Yamazaki¹, Masaaki Doi¹, Toshiyuki Shima¹ (1. Tohoku Gakuin University (Japan))

[P1-74]

Magnetocaloric effect of textured polycrystalline RNi₅ alloys

*Iurii Koshkidko¹, Jacek Ćwik¹ (1. Institute of Low Temperature and Structure Research, PAS, Okólna 2, Wrocław, 50-422 (Poland))

[P1-75]

The influence of phosphorization treatment on the high-temperature oxidation resistance of Nd-Fe-B magnetic powder

*Jingwu Zheng¹, Xinqi Zhang¹, Dongsheng Shi¹, 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))

break | Others

🏛 Mon. Jul 28, 2025 12:20 PM - 1:30 PM JST | Mon. Jul 28, 2025 3:20 AM - 4:30 AM UTC 🏛 Multi-Purpose Hall(1F)
[Lunch] Lunch

break | Others

🏛 Mon. Jul 28, 2025 10:35 AM - 10:55 AM JST | Mon. Jul 28, 2025 1:35 AM - 1:55 AM UTC 🏛 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)
[Refreshment] Refreshment

break | Others

🏛 Mon. Jul 28, 2025 3:05 PM - 3:25 PM JST | Mon. Jul 28, 2025 6:05 AM - 6:25 AM UTC 🏛 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)
[Refreshment] Refreshment

Others | Others

🏛 Mon. Jul 28, 2025 8:00 AM - 8:30 AM JST | Sun. Jul 27, 2025 11:00 PM - 11:30 PM UTC 🏛 Multi-Purpose Hall(1F)
[Registration] Registration

8:00 AM - 8:30 AM JST | 11:00 PM - 11:30 PM UTC
[2B-0800-1add]
Registration

Tue. Jul 29, 2025

Oral | Material, processing, and characterization

 Tue. Jul 29, 2025 9:00 AM - 10:25 AM JST | Tue. Jul 29, 2025 12:00 AM - 1:25 AM UTC  Convention Hall(300, 3F)

[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))

10:10 AM - 10:25 AM JST | 1:10 AM - 1:25 AM UTC

[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

 Tue. Jul 29, 2025 3:15 PM - 4:35 PM JST | Tue. Jul 29, 2025 6:15 AM - 7:35 AM UTC  Convention Hall(300, 3F)

[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))

Poster | Theory and modeling:

 Tue. Jul 29, 2025 4:35 PM - 6:00 PM JST | Tue. Jul 29, 2025 7:35 AM - 9:00 AM UTC  Red zone,
Conference rooms 101 and 102(1F)

[P2] AI, Simulations & Theory

Session Chair: Mr. Johann Fischbacher (University for Continuing Education Krems, Austria), Dr. Yusuke Hirayama (AIST, Japan)

[P2-2]

Atomistic model study on thermodynamic properties of $(\text{Nd}_{1-x}\text{Dy}_x)_2\text{Fe}_{14}\text{B}$ and dysprosium substitution effect on coercivity in neodymium permanent magnets

*Masamichi Nishino¹, Hiroshi Hayasaka², Rachida Lamouri¹, Seiji Miyashita³ (1. National Institute for Materials Science (Japan), 2. National Institute of Advanced Industrial Science and Technology (Japan), 3. The university of Tokyo (Japan))

[P2-3]

Multi-objective optimization of magnet compositions by machine learning

*Hyuga Hosoi¹, Yamano Hayate¹, Kinoshita Akihito¹, Sakuma Noritsugu¹, Thomas Schrefl², Umetani Yusuke¹, Shoji Tetsuya¹ (1. Toyota Motor Corporation (Japan), 2. Donau University Krems (Austria))

[P2-4]

Machine Learning links X-ray diffraction to Coercivity and Phase Analysis

*Qais Ali¹, Alexander Kovacs², Johann Fischbacher², Harald Oezelt², David Böhm², Markus Gusenbauer², Clemens Wager¹, Leoni Breth², Heisam Moustafa², Masao Yano³, Noritsugu Sakuma³, Akihito Kinoshita³, Tetsuya Shoji³, Akira Kato³, Thomas Schrefl^{1,2} (1. Christian Doppler Laboratory for magnet design through physics informed machine learning, Department for Integrated Sensor Systems, University for Continuing Education Krems, Wiener Neustadt, Austria (Austria), 2. Department for Integrated Sensor Systems, University for Continuing Education Krems, Wiener Neustadt, Austria (Austria), 3. Advanced Materials Engineering Division, Toyota Motor Corporation, Susono, Japan (Japan))

[P2-5]

Accelerated Discovery of Rare-Earth-Free Permanent Magnets through High-Throughput Computation

*Md Junaid Afsar Jami¹, Nitish Bhagat¹, KG Suresh¹, Amrita Bhattacharya¹ (1. IIT Bombay (India))

[P2-6]

Machine learning guided design of high-performance RE-Fe-B with abundant rare earth substitution

*Zheng Wang^{1,2}, Jing Wang^{1,2}, Fengxia Hu^{1,2}, Baogen Shen^{1,2,3,4} (1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing (China), 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing (China), 3. Ganjiang Innovation Academy, Chinese Academy of Sciences, Ganzhou, Jiangxi (China), 4. Songshan Lake Materials Laboratory, Dongguan, Jiangxi (China))

[P2-7]

Low-Cobalt/Gallium High-Performance Nd-Fe-B Permanent Magnets Discovered by Machine-Learning Based Modeling

*Zhaozhe Zhong¹, Jian Liu¹, Huamin Tang², Shiwei Kang², Haopeng Jiang³, Pengfei Wang³, Cong Wang³ (1. Toyota Motor Technical Research and Service (Shanghai) Co., Ltd. (China), 2. Intelligent ElectroMobility R&D Center by TOYOTA (China) Co., Ltd. (China), 3. Yantai Zhenghai Magnetic Material Co., Ltd. (China))

[P2-8]

Magnetic crystal reconstruction and optimisation using Graph Neural Networks

*Gino Hrkac¹, Hao Zhang¹, Prathyush Menon¹ (1. University of Exeter (UK))

[P2-9]

The establishment of a microstructural evaluation system in sintered NdFeB magnets via computer vision technology

*Zihao Wang¹, Shengen Guan¹, Ning Wang¹, Zhaohong Feng¹, Xiaoqian Bao¹, Jiheng Li¹, Zhimeng Guo¹, Xuexu Gao¹ (1. University of Science and Technology Beijing (China))

[P2-10]

Effective fine-tuning of image generative AI on FePt microstructures using the phase-field method

*Toshiyuki Koyama^{1,2} (1. Nagoya University (Japan), 2. National Institute for Materials Science (Japan))

[P2-11]

Phase equilibria in Nd-based sintered magnets with Carbon

*Taichi ABE¹, Tadakatsu OHKUBO¹ (1. NIMS (Japan))

[P2-12]

Solidification-Induced Strains in Sintered Nd-Fe-B Magnets and Their Impact on Coercivity

*Oleksandr Hrushko¹, Inna Kyrytsya², Serhii Sukhorukov², Andrii Hubanov², Tetiana Arkhipova², Thomas Schrefl¹ (1. University for Continuing Education Krems (Austria), 2. Vinnytsia National Technical University (Ukraine))

[P2-13]

Modelling of hard magnetic materials from density functional theory

*Miroslaw Werwinski¹, Wojciech Marciniak^{1,2,3}, Justyn Snarski-Adamski¹, Joanna Marciniak^{1,3}, Justyna Rychły-Gruszecka¹ (1. Institute of Molecular Physics, Polish Academy of Sciences (Poland), 2. Faculty of Materials Engineering and Technical Physics, Poznan University of Technology (Poland), 3. Department of Physics and Astronomy, Uppsala University (Sweden))

[P2-14]

Terbium under High Pressure: First-Principles Density Functional Theory and Dynamical Mean-Field Theory Studies

*Cheng-Chien Chen¹ (1. University of Alabama at Birmingham (United States of America))

[P2-15]

Study of mechanism to improve the Magnetic Properties of Nd-Fe-B magnets by Dy addition using the Density Functional Theory Calculations

*SHRANTIK KUMAR DEY¹, SHAMPA AICH¹ (1. IIT KHARAGPUR, Kharagpur, WB, PIN- 721302 (India))

[P2-16]

Magnetic and magnetocaloric effect on the high entropy alloys (Y_{0.2}La_{0.2}Gd_{0.2}Pr_{0.2}Er_{0.2})Al₂ and (Y_{0.2}La_{0.2}Nd_{0.2}Pr_{0.2}Er_{0.2})Al₂

*Bruno Alho¹, Paula Ribeiro¹, Rodrigo de Oliveira¹, Alexandre Carvalho^{1,2,3}, Pedro von Ranke¹, Cesar Silva², Marcos Vinícius Puydinger⁴, Erik Usuda², Ricardo Silva² (1. Rio de Janeiro State University (Brazil), 2. Universidade Federal de São Paulo (Brazil), 3. Universidade Estadual de Maringá (Brazil), 4. Universidade Estadual de Campinas (Brazil))

[P2-17]

Magnetothermal and magnetocaloric properties of Er_{1-x}Tm_xAl₂ series compounds

*Paula Ribeiro¹, Bruno Alho¹, Rodrigo de Oliveira¹, Pedro von Ranke¹, Eduardo Nóbrega¹, Vinicius de Sousa¹, Alexandre Carvalho^{1,2,3}, José Luis Affonso¹ (1. Rio de Janeiro State University (Brazil), 2. Universidade Federal de São Paulo (Brazil), 3. Universidade Estadual de Maringá (Brazil))

[P2-18]

Demagnetization process of Sm(FeCo)₁₂/α-Fe grains with a gradient structure

*Kunihiro KOIKE¹, Yishan QIAO¹, Nobuyuki INABA¹, Hiroaki KATO¹, Masaru Itakura², Msaki NAKANO³, Susumu Okubo⁴, Hitoshi Ohta⁴ (1. Yamagata University (Japan), 2. Kyushu University (Japan), 3. Nagasaki University (Japan), 4. Kobe University (Japan))

Poster | Raw materials

📅 Tue. Jul 29, 2025 4:35 PM - 6:00 PM JST | Tue. Jul 29, 2025 7:35 AM - 9:00 AM UTC 🏠 Green zone, Conference rooms 101 and 102(1F)

[P2] Raw Materials & Recycling

Session Chair: Mr. Johann Fischbacher (University for Continuing Education Krems, Austria), Dr. Yusuke Hirayama (AIST, Japan)

[P2-19]

Promoting Sustainability in Permanent Magnets: The Role of Product Category Rules (PCR) in Rare Earth Supply Chains

*Neda Bahremandi Bahremandi¹, Gareth Hatch² (1. Project Manager (Belgium), 2. Secretary General (UK))

[P2-20]

Metallothermal Reduction of Neodymium chloride: A Strategic Route for High-Purity Neodymium Metal for NdFeB Magnets

*Purushotham Yadoji¹, Purushotham N¹, Rajesh Kumar S¹ (1. Centre for Materials for Electronics Technology (C-MET), Hyderabad (India))

[P2-21]

Effect of milling on Particle Size and Magnetic Properties of Recycled Nd₂Fe₁₄B Alloy Powder

*Purushotham Yadoji¹, Rohith Vinod Kulangara¹, Rajesh Kumar S¹ (1. Centre for Materials for Electronics Technology (C-MET), Hyderabad (India))

[P2-22]

Melting and solidification behavior of oxidized Nd-Fe-B powder upon plasma spheroidizing

*Natalia Kolchugina¹, Igor Belyaev², Andrey Samokhin¹, Vyacheslav Bazhenov³, Pavel Mogil'nikov³, Nikolay Edunov², Pavel Prokofev¹, Roman Vakhrushev¹, Andrey Fadeev¹ (1. IMET RAS (Russia), 2. VSU (Russia), 3. NUST MISiS (Russia))

[P2-23]

Uranium in-situ leaching liquors are a potential source of "magnetic" REE

Evgenii Kirillov¹, *Vladimir Rychkov¹ (1. UrFU (Russia))

[P2-24]

CREATION AND DEVELOPMENT OF TECHNOLOGIES FOR PRODUCING RARE-EARTH METALS «GIREDMET» FOR USE IN VARIOUS INDUSTRIAL AREAS

*Vitalii Sanin¹, Sergei Vasilenko, Oleg Budin, Olga Yurasova, Sergei Melnikov, Alexander Rzhetsky, Galina Ryzhkova, Bogdan Chernyshev (1. Sanin V.V. (Sazhin Giredmet JSC) (Russia))

[P2-25]

Investigation of Oxidation Behaviour and Passivation Rates for Recycled Hydrogen Processed NdFeB Powder

*Safiyah Hussain¹, Shahrouz Nayebossadri¹, Viktoria Kozak¹, Oliver Brooks¹, Vicky Mann¹, Allan Walton¹ (1. University of Birmingham (UK))

[P2-26]

Facile All-Elements Recycling of HRE-Containing Nd-Fe-B Magnet Sludge by Reduction-Diffusion with CaH₂

*Vitalii Galkin^{1,2,3}, Jong Wook Roh², Dong Hwan Kim¹, Jeongmin Kim¹, Dongsoo Kim³ (1. Daegu Gyeongbuk Institute of Science and Technology (DGIST) (Korea), 2. Kyungpook National University (KNU) (Korea), 3. Korea Institute of Materials Science (KIMS) (Korea))

[P2-27]

Tailoring magnetic properties of short loop recycled NdFeB magnets via powder blending

*Joseph Gresle Farthing¹, Abeshaa Mahendran¹, Muhammad Awais², Robert Arnold¹, Viktoria Kozak², Anupam Maity², Shelly Tchoutezo^{1,2}, Allan Walton² (1. HyProMag (UK), 2. University of Birmingham (UK))

[P2-28]

Short loop recycling of sintered NdFeB magnets from auxiliary automotive motors utilising HPMS

*Abeshaa Mahendran¹, Joseph Gresle Farthing¹, Muhammad Awais², Robert Arnold¹, Viktoria Kozak², David Moule³, Harvey Smith³, Adrian Caden², David Brown², Allan Walton² (1. HyProMag (UK), 2. University of Birmingham (UK), 3. ZF Automotive UK Limited (UK))

[P2-29]

Recycling of NdFeB magnets from hard disc drive scrap using HPMS and using recycled magnets in an automotive auxiliary motor

*Muhammad Awais¹, Abeshaa Mahendran², Jovey Farthing², Robert Arnold², Viktoria Kozak¹, David Moule³, Harvey Smith³, Allan Walton¹ (1. School of Metallurgy and Materials, University of Birmingham, Edgbaston, Birmingham, B15 2SE (UK), 2. HyProMag Limited, Tyseley Energy Park, The Fordrough, Hay Mills, Birmingham B25 8DW (UK), 3. ZF Automotive UK Limited, Blythe Valley Park, Solihull B90 8BG (UK))

[P2-30]

Hydrogen processed NdFeB scraps: Evolution of properties under mechanical ball milling

*César de Julian Fernandez¹, Amanuel Elias Wako^{3,1}, Beatrice Muzzi^{2,6}, Riccardo Cabassi¹, Laura Grau⁴, Pablo Rodríguez Suárez¹, Alba Berja Torres⁵, Adrian Quesada⁵, Carlo Burkhardt⁴, Franca Albertini¹, Claudio Sangregorio² (1. Institute of Materials for Electronics and Magnetism, CNR (Italy), 2. Institute of Chemistry of OrganoMetallic Compounds, CNR (Italy), 3. Dept. Chemistry, Life Science and Environmental Sustainability, University of Parma (Italy), 4. Institute for Precious and Technology Metals, Pforzheim University (Germany), 5. Institute of Ceramics and Glasses, CSIC (Spain), 6. Dept. of Chemistry "U. Schiff", University of Florence and INSTM (Italy))

[P2-31]

Investigations on the slag extraction method for pyrometallurgical REE recycling from sintered and bonded NdFeB magnets using borate slags

*Daniel Vogt¹, Chinedu Francis Anochie¹, Ludwig Blenau¹, Alexandros Charitos¹ (1. TU Bergakademie Freiberg (Germany))

[P2-32]

Boosting the Coercivity of the Nd-Fe-B Alloy Recovered from Oxidized Scrap Magnets

Marcelo Augusto Anzolin Rosa¹, Júlio César Spillere Ronchi¹, Querem Rebelo³, Camila Pinto³, Daniele Fagundes², José Domingos Ardisson², Sergio Michielon de Souza³, *Paulo Antônio Pereira Wendhausen¹ (1. UFSC (Brazil), 2. CDTN (Brazil), 3. UFAM (Brazil))

[P2-33]

Hydrogen-based functional recycling of Nd-Fe-B sintered magnets from e-mobility and wind power: influence on GBDP microstructure evolution and possibilities to improve the resulting properties

*Mario Schönfeldt^{1,2}, Jürgen Rossa¹, Konrad Opelt^{1,2}, Kilian Schäfer², Lukas Schäfer², Fernando Maccari², Matic Jovičević-Klug³, Tim M. Schwarz³, Chi-Chia Lin^{1,2}, Mahmudul Hasan¹, Jürgen Gassmann¹, Dierk Raabe³, Oliver Gutfleisch² (1. Fraunhofer IWKS, Fraunhofer Research Institution for Materials Recycling and Resource

Strategies, Aschaffenburg 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))

[P2-34]

Nitric acid technology for processing magnetic production waste

Evgenii Kirillov¹, *Sergey Kirillov¹, Grigory Bunkov¹, Denis Smyshlyaev¹, Aslanbek Taukin¹ (1. UrFU (Russia))

Poster | Material, processing, and characterization

 Tue. Jul 29, 2025 4:35 PM - 6:00 PM JST | Tue. Jul 29, 2025 7:35 AM - 9:00 AM UTC  Blue zone,
Conference rooms 101 and 102(1F)

[P2] Sm-based Magnets & Nitrides

Session Chair: Mr. Johann Fischbacher (University for Continuing Education Krems, Austria), Dr. Yusuke Hirayama (AIST, Japan)

[P2-35]

Nanoscale Structural and Chemical Insights into the Magnetic Performance of SmCo Permanent Magnets

*Esmail Adabifiroozjaei¹, Stefan Giron⁷, Nikita Polin², Yangyiwei Yang⁸, Fernando Maccari⁷, Andras Kovács³, Trever Almeida⁴, Dominik Ohmer⁵, Kaan Üstüner⁵, Aparna Saksena², Matthias Katter⁵, Iliya Angelov Radulov⁷, Christoph Freysoldt², Rafal E. Dunin-Borkowski³, Bai-Xiang Xu⁸, Oliver Gutfleisch⁷, Baptiste Gault^{2,6}, Konstantin P Skokov⁷, Leopoldo Molina-Luna¹ (1. Advanced Electron Microscopy Division, Institute of Material Science, Technical University of Darmstadt, 64287 Darmstadt, Germany (Germany), 2. Max Planck Institute for Sustainable Materials, Düsseldorf 40237, Germany (Germany), 3. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute, Forschungszentrum Jülich, Jülich 52425, Germany. (Germany), 4. SUPA, School of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, United Kingdom (UK), 5. VACUUMSCHMELZE GmbH & Co. KG, 63450 Hanau, Germany (Germany), 6. Department of Materials, Royal School of Mines, Imperial College London, London, United Kingdom (UK), 7. Institute of Materials Science, Technische Universität Darmstadt, 64287 Darmstadt, Germany (Germany), 8. Mechanics of Functional Materials Division, Institute of Materials Science, Technische Universität Darmstadt, Darmstadt 64287, Germany (Germany))

[P2-36]

Microstructural Building Blocks Governing the High-Coercivity State in SmCo-Based Magnets: Searching for the “Weak Link” and the “Perfect Defect”

*Konstantin P Skokov¹, Alex Aubert¹, Burcak Ekitli¹, Esmail Adabifiroozjaei¹, Leopoldo Molina-Luna¹, Yangyiwei Yang¹, Baixiang Xu¹, Nikita Polin², Baptiste Gault², Michael Farle³, Oliver Gutfleisch¹ (1. Technische Universität Darmstadt (Germany), 2. Max-Planck Institute for Sustainable Materials (Germany), 3. University of Duisburg-Essen (Germany))

[P2-37]

Enhancing ferromagnetism in the Sm(Co, Mn)₅ system: Impact on phase stability and magnetic properties

*Hongguo Zhang¹, Panlong Chen¹, Boteng Song¹, Yuqing Li¹, Xiaoming Zhang², Weiqiang Liu¹, Qiong Wu¹, Ming Yue¹, Qinglin Zeng⁴, Jinghui Di³ (1. Beijing University of Technology (China), 2. Hebei University of Technology (China), 3. Hangzhou Magmax Technology Co., Ltd. (China), 4. High Mag Technology (Shenzhen) Co., Ltd. (China))

[P2-38]

The effect of Fe, Ni substitution on Structural and Magnetic Properties of SmCo₅ Magnets

*Enbang Ti¹, Richard Stuart Sheridan¹, Mangaliso Chaka Obi Brown¹ (1. University of Birmingham (UK))

[P2-39]

Magnetic properties of (Sm,Y)Fe₂Co₂B melt-spun ribbons

*Tetsuji Saito¹ (1. Chiba Institute of Technology (Japan))

[P2-40]

Study on the reduction of high-temperature flux loss in Sm₂Co₁₇ permanent magnets

*Bo Zhou¹, Lei Liu^{1,2}, Yong Ding^{1,2}, Yingli Sun^{1,2}, Aru Yan^{1,2} (1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences (China), 2. University of Chinese Academy of Sciences (China))

[P2-41]

Strip Casting of SmCo Alloys to Reduce Manufacture Costs of Sm₂(Co,Fe,Zr,Cu)₁₇ Permanent Magnets

*Charlie Lyle Gormly Gardner¹, Oliver Peter Brooks¹, Zakareya Nashwan¹, Richard Stuart Sheridan¹ (1. University of Birmingham (UK))

[P2-42]

Effects of Thermal Damage and Thermal Demagnetisation on the Hydrogen Decrepitation Behaviour of Sm₂TM₁₇ Sintered Magnets

*James Thomas Griffiths¹, Oliver Peter Brooks¹, Gokul Subramanian¹, Viktoria Kozak¹, Alexander Campbell², Alexis Lambourne², Richard Stuart Sheridan¹ (1. University of Birmingham (UK), 2. Rolls-Royce Groups plc (UK))

[P2-43]

Maximizing the extrinsic magnetic properties of SmCoB-based compounds

Konstantinos Grammatikakis¹, Alex Aubert¹, Konstantin Skokov¹, Esmaeil Adabifiroozjaei², Leopoldo Molina-Luna², Oliver Gutfleisch¹, *Pelin Tozman¹ (1. Functional Materials, Technische Universität Darmstadt, Germany (Germany), 2. Advanced Electron Microscopy Division, Institute of Material Science, Technical University of Darmstadt, 64287 Darmstadt (Germany))

[P2-44]

High-performance Exchange-coupled Rare-earth Hard Magnetic Nano-composite Ribbons: Processing, Properties and Applications

*SHAMPA AICH¹, Akila Raja², Shrantik K Dey¹, Gautam Sinha³ (1. Indian Institute of Technology (IIT) Kharagpur, WB-721302 (India), 2. Ames National Laboratory, IOWA, IA 50011 (United States of America), 3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore, MP-452013 (India))

[P2-45]

Expansion of the STEP method to magnetically isotropic magnets

*Kurima Kobayashi¹, Tomoko Kuno¹, Hiroshi Fujiwara¹ (1. Ritsumeikan University (Japan))

[P2-46]

The correlation between the coercivity and microstructure of the novel 1-12-type sintered magnet under high molding pressure

*Tomoko Kuno¹, Kurima Kobayashi¹, Hiroshi Fujiwara¹ (1. Ritsumeikan University (Japan))

[P2-47]

Investigation of Multiscale Structural and Compositional Optimization on Magnetic Properties in ThMn₁₂-type Permanent Magnets

*Hui-Dong Qian¹, Jingzhi Han¹, Tao Zhu¹, Qiang Gao¹, Jinbo Yang^{1,2,3,4} (1. Institute of Condensed Matter and Material Physics, School of Physics, Peking University (China), 2. State Key Laboratory for Mesoscopic Physics and School of Physics, Peking University (China), 3. Beijing Key Laboratory for Magnetoelectric Materials and Devices (China), 4. Peking University Yangtze Delta Institute of Optoelectronics (China))

[P2-48]

A novel approach to fabricate Sm-Co micro-magnets and its microstructure

Muni Bhaskar Siva Kumar¹, *Taisuke Sasaki¹, Ryogen Fujiwara², Hossein Sepehri-Amin¹, Mio Otsuru², Yoshinori Fujikawa², Tadakatsu Ohkubo¹ (1. National Institute for Materials Science (Japan), 2. TDK Corporation (Japan))

[P2-49]

Fabrication of Sm-Co-Fe-Cu-Zr and $\text{SrFe}_{12}\text{O}_{19}$ based permanent magnets by PIM-technology and stereolithography methods

*Bogdan Dmitrievich Chernyshev^{1,2}, Igor Viktorovich Shchetinin² (1. Giredmet JSC (Russia), 2. NUST MISIS (Russia))

[P2-50]

Ultrafine $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ hard magnetic particles synthesized by mechanochemical process

*Zhi Yang¹, Hongguo Zhang¹ (1. Beijing University of Technology (China))

[P2-51]

Production of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ magnets from fine powder produced from reduction diffusion method

*Akihide Hosokawa¹, Yusuke Hirayama¹, Shusuke Okada¹, Yuta Iida^{1,2} (1. National Institute of Advanced Industrial Science and Technology (Japan), 2. Niterra Co., Ltd. (Japan))

[P2-52]

Effect of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ fine powder obtained by jet milling on magnetic properties

*Teruta Inoue¹, 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))

[P2-53]

Effect of Bi addition on Decomposition Temperature of Sm-Fe-N

*Shusuke Okada¹, Kenta Takagi¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[P2-54]

Temperature-Mediated In Situ Synthesis of Γ -FeZn Phase and Its Coercivity Enhancement Mechanism in Sm-Fe-N Magnets

*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))

[P2-55]

An attempt to lower melting point of sintering aids for low temperature sintering of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ magnets

*Tatsuya Shiratori¹, Yuta Iida¹, Teruta Inoue¹, Akihide Hosokawa², Wataru Yamaguchi², Yusuke Hirayama² (1. Niterra Co., Ltd. (Japan), 2. AIST (Japan))

[P2-56]

Rapid Preparation of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ Fine Powder by Cryo-milling

*Qiang Gao¹, Dong Liang¹, Hui-Dong Qian¹, Tao Zhu¹, Jingzhi Han^{1,2}, Changsheng Wang^{1,2}, Wenyun Yang^{1,2}, Jinbo Yang^{1,2,3,4} (1. Institute of Condensed Matter and Material Physics, School of Physics, Peking University (China), 2. Beijing Key Laboratory for Magnetoelectric Materials and Devices (China), 3. State Key Laboratory for Mesoscopic Physics and School of Physics, Peking University (China), 4. Peking University Yangtze Delta Institute of Optoelectronics (China))

[P2-57]

Surface engineering to improve coercivity of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ powder

*Wataru Yamaguchi¹, Jian Wang¹, Akihide Hosokawa¹, Kenta Takagi¹, Yusuke Hirayama¹ (1. AIST (Japan))

[P2-58]

Crystal structure and Magnetic properties of $\text{Yb}_2\text{Fe}_{17}$ and $\text{Yb}_2\text{Fe}_{17}\text{N}_x$

*Tao Zhu¹, Qiang Gao^{1,2}, Jinbo Yang^{1,2} (1. State Key Laboratory for Mesoscopic Physics and School of Physics, Peking University (China), 2. Institute of Condensed Matter and Material Physics, School of Physics, Peking University (China))

[P2-59]

Enhanced Coercivity in $\text{Sm}(\text{Fe}_{0.8}\text{Co}_{0.2})_{11-x}\text{TiCu}_x$ Strips through Grain Boundary Phase Optimization

*Hai Bo FENG¹, Feng Yang LIU¹, Hang ZHAO¹ (1. CISRI (China))

[P2-60]

Influence of Cobalt on the Coercivity of $\text{Sm}(\text{Fe,Ti,V})_{12}$ -based Magnets

*Toni Subagja^{1,2}, Jiasheng Zhang¹, Andres Martin-Cid¹, Anton Bolyachkin¹, Nikita Kulesh¹, Xin Tang¹, Hossein Sepehri-Amin^{1,2} (1. National Institute for Materials Science (Japan), 2. Graduate School of Science and Technology, University of Tsukuba (Japan))

Poster | Material, processing, and characterization

📅 Tue. Jul 29, 2025 4:35 PM - 6:00 PM JST | Tue. Jul 29, 2025 7:35 AM - 9:00 AM UTC 🏠 Yellow zone, Conference rooms 101 and 102(1F)

[P2] RE-free Magnets

Session Chair: Mr. Johann Fischbacher (University for Continuing Education Krems, Austria), Dr. Yusuke Hirayama (AIST, Japan)

[P2-61]

MnAl spherical magnetic particles with stacked twin crystal structure and their Sintered magnets

*Koji Naito¹, Yasunari Ishikawa¹ (1. AGC Corp. (Japan))

[P2-62]

Mn-Al-C efficient powder nanostructuring by fast cryogenic milling

*Jorge Vergara Vergara Ortega^{1,2}, Cyrus Zamani¹, Andres Martin-Cid¹ (1. IMDEA nanociencia (Spain), 2. Universidad Complutense de Madrid (Spain))

[P2-63]

Low-Temperature-Phase MnBi Nanocomposite Magnets for Rare-Earth-Free Permanent Magnet Applications

*Jian WANG¹, Wataru YAMAGUCHI¹, Yusuke HIRAYAMA¹ (1. National Institute of Advanced Industrial Science and Technology (AIST) (Japan))

[P2-64]

Tailoring the morphology and magnetic properties of Strontium Hexaferrite (SFO) nanoparticles by successive cation substitution of Ca, Al and Mn for Rare Earth Free Permanent Magnet Applications

*Durgamadhab Mishra¹, Nishtha Vats¹, Sampat Raj Vadera¹ (1. IIT Jodhpur (India))

[P2-65]

Synthesis of La-Co highly co-substituted M-type Sr ferrite under high oxygen pressure using hot isostatic pressurization method

*Takeshi WAKI¹, Shinji NAKAI¹, Hiroto OHTA², Masaki KATO², Yoshikazu TABATA¹, Hiroyuki NAKAMURA¹ (1. Department of Materials Science and Engineering, Kyoto University (Japan), 2. Doshisha University (Japan))

[P2-66]

Ferrite-based recycled magnets without or with less critical raw materials for electric motor application

*Petra Jenus Belec¹, Amit Mishra¹, Matej KOMELJ¹, Anubhav Vishwakarma¹, Adrian Quesada², Cecilia Granados-Miralles², Alba Berja², Daniel Casaleiz², Boris Saje³, Sandra Eriksson⁴, Blaž Belec⁵ (1. Jožef Stefan Institute (Slovenia), 2. Institute of Ceramics and Glass, CSIC (Spain), 3. Kolektor Mobility, d.d. (Slovenia), 4. Uppsala University (Sweden), 5. University of Nova Gorica (Slovenia))

[P2-67]

Synthesis of Re/Upcycled Sr-Ferrite Permanent Magnets from Mill Scale

*Duru Kalkavan¹, Nilay Gunduz Akdogan^{1,3}, Doruk Celebi^{1,2}, Ozan Akdogan^{1,2} (1. NANOTerial Technology Corporation (Turkey), 2. Faculty of Engineering and Natural Sciences, Bahcesehir University (Turkey), 3. Faculty of Engineering, Piri Reis University (Turkey))

[P2-68]

Green Synthesized Cobalt Ferrite: on Cancer Tumor Hyperthermia and Targeting Therapy

*An-Cheng Aidan Sun^{1,2,3}, Chien-Shiun Liao¹, Sea-Fue Wang⁴, Glemarie C. Hermosa¹, Yu-Xiu Deng¹ (1.

Department of Chemical Engineering & Materials Science, Yuan Ze University (Taiwan), 2. Ming-Kuan Biomedical Technology Corporation (Taiwan), 3. Graduate School of Biotechnology and Bioengineering, Yuan Ze University (Taiwan), 4. Department of Materials and Mineral Resources Engineering, National Taipei University of Technology (Taiwan))

[P2-69]

Iron nitride Fe₁₆N₂: intrinsic properties, synthesis, stability and bulk magnets

*Imants Dirba¹, Jürgen Gassmann², Oliver Diehl², Oliver Gutfleisch¹ (1. Functional Materials, Institute of Materials Science, Technical University of Darmstadt, 64287 Darmstadt, Germany (Germany), 2. Fraunhofer Research Institution for Materials Recycling and Resource Strategies IWKS, Aschaffener Str. 121, 63457 Hanau, Germany (Germany))

[P2-70]

Hard magnetic and critical raw materials free permanent magnets on the basis of the Fe₂P system

*Jürgen Gassmann¹, Ruijuan Yan¹, Iliya Radulov¹, Oliver Diehl¹, Fernando Maccari², Konstantin Skokov², Oliver Gutfleisch² (1. Fraunhofer IWKS (Germany), 2. TU Darmstadt (Germany))

[P2-71]

temperature dependent magnetic properties rare earth free Fe₄CoSi permanent magnet

*jisang hong hong¹ (1. pukyong national university (Korea))

break | Others

📅 Tue. Jul 29, 2025 12:15 PM - 1:30 PM JST | Tue. Jul 29, 2025 3:15 AM - 4:30 AM UTC 🏢 Multi-Purpose Hall(1F)

[Lunch] Lunch

break | Others

📅 Tue. Jul 29, 2025 10:25 AM - 10:45 AM JST | Tue. Jul 29, 2025 1:25 AM - 1:45 AM UTC 🏢 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)

[Refreshment] Refreshment

break | Others

📅 Tue. Jul 29, 2025 2:55 PM - 3:15 PM JST | Tue. Jul 29, 2025 5:55 AM - 6:15 AM UTC 🏢 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)

[Refreshment] Refreshment

[Others | Others](#)

📅 Tue. Jul 29, 2025 8:30 AM - 9:00 AM JST | Mon. Jul 28, 2025 11:30 PM - 12:00 AM UTC 🏛️ Multi-Purpose Hall(1F)

[Registration] Registration

8:30 AM - 9:00 AM JST | 11:30 PM - 12:00 AM UTC

[3B-0830-1add]

Registration

Wed. Jul 30, 2025

Oral | Material, processing, and characterization

 Wed. Jul 30, 2025 9:00 AM - 10:35 AM JST | Wed. Jul 30, 2025 12:00 AM - 1:35 AM UTC  Convention Hall(300, 3F)**[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

📅 Wed. Jul 30, 2025 10:55 AM - 12:15 PM JST | Wed. Jul 30, 2025 1:55 AM - 3:15 AM UTC 🏛️ Convention Hall(300, 3F)

[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))

12:00 PM - 12:15 PM JST | 3:00 AM - 3:15 AM UTC

[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))

Oral | Material, processing, and characterization

📅 Wed. Jul 30, 2025 1:30 PM - 2:35 PM JST | Wed. Jul 30, 2025 4:30 AM - 5:35 AM UTC 🏛️ Convention Hall(300, 3F)

[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))

break Others	Wed. Jul 30, 2025 12:15 PM - 1:30 PM JST Wed. Jul 30, 2025 3:15 AM - 4:30 AM UTC Multi-Purpose Hall(1F) [Lunch] Lunch
break Others	Wed. Jul 30, 2025 10:35 AM - 10:55 AM JST Wed. Jul 30, 2025 1:35 AM - 1:55 AM UTC (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F) [Refreshment] Refreshment
break Others	Wed. Jul 30, 2025 2:35 PM - 2:55 PM JST Wed. Jul 30, 2025 5:35 AM - 5:55 AM UTC (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F) [Refreshment] Refreshment
Others Others	Wed. Jul 30, 2025 8:30 AM - 9:00 AM JST Tue. Jul 29, 2025 11:30 PM - 12:00 AM UTC Multi-Purpose Hall(1F) [Registration] Registration

8:30 AM - 9:00 AM JST | 11:30 PM - 12:00 AM UTC

[4B-0830-1add]

Registration

Others Others	Wed. Jul 30, 2025 6:00 PM - 8:00 PM JST Wed. Jul 30, 2025 9:00 AM - 11:00 AM UTC Subaru(Banquet Hall), Annex Bldg.(1F) of HOTEL NIKKO TSUKUBA(1-1364-1 Azuma, Tsukuba) [Conference Dinner] Conference Dinner
Others Others	Wed. Jul 30, 2025 5:00 PM - 5:15 PM JST Wed. Jul 30, 2025 8:00 AM - 8:15 AM UTC Lobby (Ground floor) [Group photo] Group photo

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))

Oral | Others

📅 Thu. Jul 31, 2025 4:10 PM - 5:00 PM JST | Thu. Jul 31, 2025 7:10 AM - 8:00 AM UTC 🏛️ Convention Hall(300, 3F)

[Closing Remarks] Closing Remarks

4:10 PM - 5:00 PM JST | 7:10 AM - 8:00 AM UTC

[5A-1610-1add]

Others

break | Others

🏛 Thu. Jul 31, 2025 12:10 PM - 1:30 PM JST | Thu. Jul 31, 2025 3:10 AM - 4:30 AM UTC 🏛 Multi-Purpose Hall(1F)
[Lunch] Lunch

break | Others

🏛 Thu. Jul 31, 2025 10:30 AM - 10:50 AM JST | Thu. Jul 31, 2025 1:30 AM - 1:50 AM UTC 🏛 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)
[Refreshment] Refreshment

break | Others

🏛 Thu. Jul 31, 2025 2:45 PM - 3:05 PM JST | Thu. Jul 31, 2025 5:45 AM - 6:05 AM UTC 🏛 (1)In front of Hall300m, (2) Conference rooms 101 and 102(1F)(1F)
[Refreshment] Refreshment

Others | Others

🏛 Thu. Jul 31, 2025 8:30 AM - 9:00 AM JST | Wed. Jul 30, 2025 11:30 PM - 12:00 AM UTC 🏛 Multi-Purpose Hall(1F)
[Registration] Registration

8:30 AM - 9:00 AM JST | 11:30 PM - 12:00 AM UTC
[5B-0830-1add]
Registration