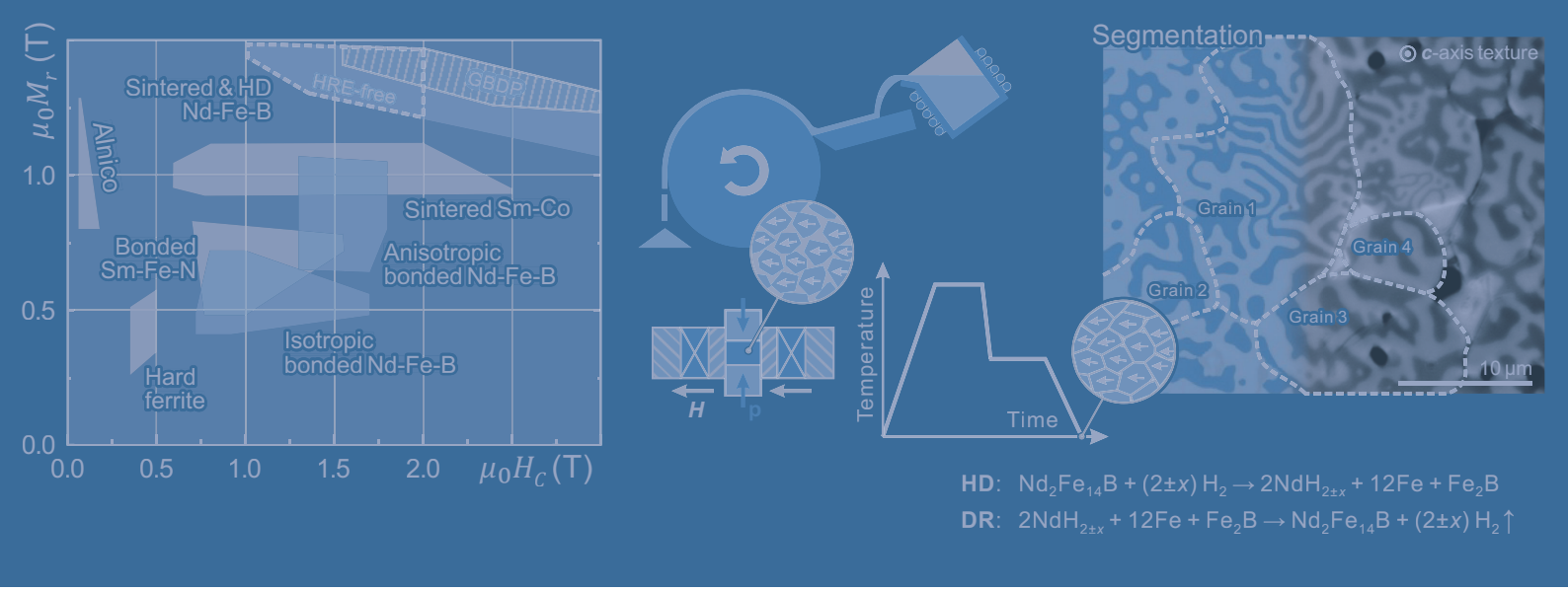
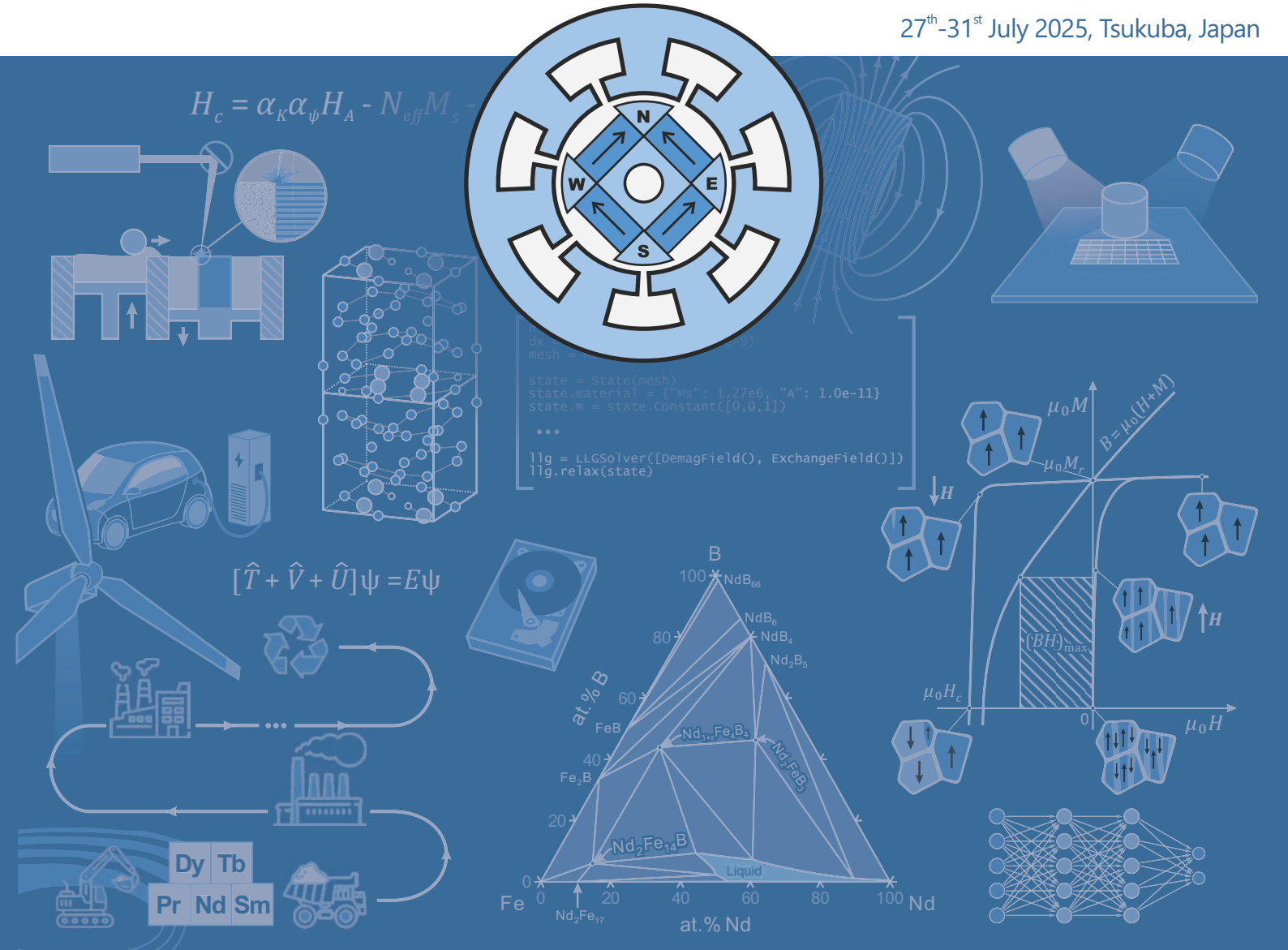


The 28th International Workshop on
Rare Earth and Future Permanent Magnets and Their Applications

PROGRAM

27th-31st July 2025, Tsukuba, Japan



Co-organized by

National Institute for Materials Science

Supported by

Digital Transformation Initiative Center for Magnetic Materials

Permanent Magnet Partnership

We sincerely thank the following organizations and individuals for their generous support.

助成金拠出団体

- 公益財団法人 プロテリアル材料科学財団 (Proterial Materials Science Foundation)
- 公益財団法人 つくば科学万博記念財団 (Tsukuba Expo Memorial Foundation)
- 一般社団法人 つくば観光コンベンション協会 及び つくば市
  (Tsukuba Tourism and Convention Association & Tsukuba City)
- 国立研究開発法人 物質・材料研究機構 (National Institute for Materials Science)

個人寄付（敬称略）

- 佐川眞人 (Masato Sagawa)

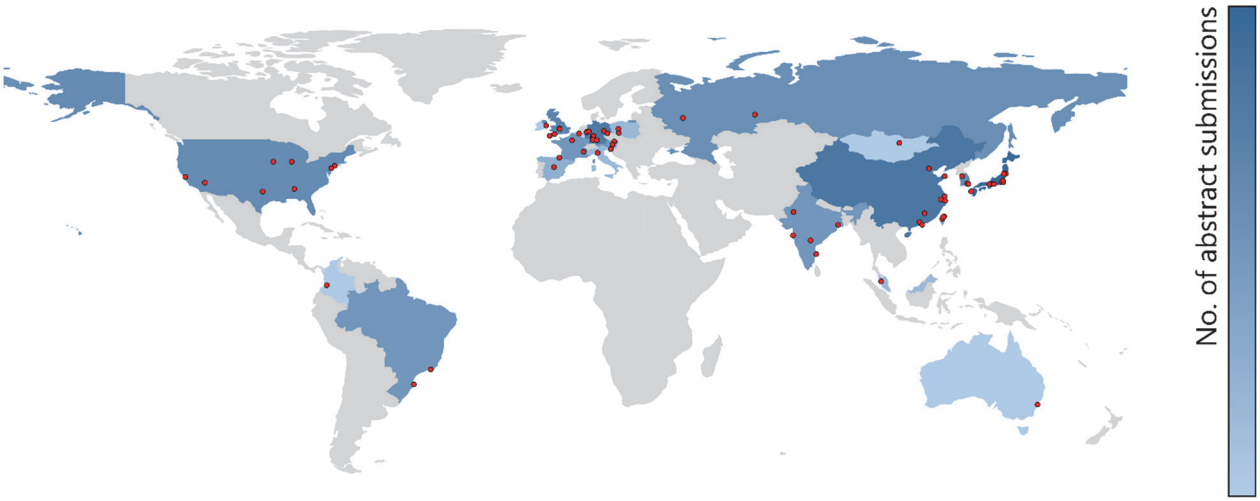
PREFACE

It is our great honor to welcome all delegates to the 28th International Workshop on Rare Earth and Future Permanent Magnets and Their Applications (REPM 2025) in Tsukuba. Since the inaugural workshop held in Dayton, Ohio, in 1976, the REPM series has served as a premier international forum for permanent magnet research. This marks the fifth time Japan has hosted the event – following Hakone (1979), Kyoto (1989), Sendai (2000) and Nagasaki (2012) – and we believe that Tsukuba will be another success. Just as Osaka is now showcasing Japan's scientific progress and vision of the future with Expo 2025, Tsukuba previously had the chance to do so with Expo 1985. Established as a Scientific City during those pioneering days, Tsukuba has grown to encompass over 30 research institutes and universities, including the *National Institute for Materials Science* (NIMS), among many others. We hope that REPM 2025, held at this major research hub, will spark fruitful discussions about rare earth and future permanent magnets as well as related research topics, including emerging trends such as high-throughput experiments and the use of AI, machine learning, and digital twins in materials science.

More than 220 abstracts have been submitted to REPM 2025 from 22 countries represented by 69 different cities. This highlights an interest and global efforts in permanent magnet research which are as high as ever. Once faced with the rare earth crisis in 2010, society keeps struggling with other challenges including supply chain risks, climate changes and geopolitical tension. As various nations begin to diversify the production of rare earth permanent magnets and accelerate the transition to green energy, the responsibility of scientific community is to conduct basic research and innovations on permanent magnets that can facilitate this process and ensure a sustainable future. We look forward to lively debates, new collaborations, and breakthroughs on permanent magnets and their applications.

We would like to thank the REPM Steering Committee, International Advisory Committee, National Organizing Committee, Program Committee, and Local Organizing Committee for their hard work and assistance in organizing this workshop. We express our special gratitude to the organizations, companies, and individuals who sponsored the REPM 2025.

Kazuhiro Hono
Tadakatsu Ohkubo



REPM 2025

Conference Chairs

K. Hono

T. Ohkubo

Local Organizing Committee

A. Kato

Y.K. Takahashi

H. Sepehri-Amin

T.T. Sasaki

Xin Tang

A. Bolyachkin

K. Sodeyama

Program Committee

S. Okamoto (Tohoku University)

M. Takezawa (Kyutech)

K. Ozaki (AIST)

T. Nishiuchi (Proterial, Ltd.)

K. Hioki (Daido Steel Co., Ltd.)

H. Nakamura (Shin-Etsu Chemical Co., Ltd.)

Y.K. Takahashi (NIMS)

H. Sepehri-Amin (NIMS)

T.T. Sasaki (NIMS)

Xin Tang (NIMS)

A. Bolyachkin (NIMS)

T. Ohkubo (NIMS)

Secretariat

Y. Maeda

T. Furubayashi

J. Uzuhashi

National Organizing Committee

H. Fukunaga (Nagasaki University)

S. Sugimoto (Tohoku University)

S. Okamoto (Tohoku University)

T. Nakamura (Tohoku University)

M. Takezawa (Kyutech)

K. Ozaki (AIST)

T. Miyake (AIST)

K. Ono (Osaka University)

H. Nakamura (Shin-Etsu Chemical Co., Ltd.)

T. Nishiuchi (Proterial, Ltd.)

K. Takeda (TDK Corporation)

K. Hioki (Daido Steel Co., Ltd.)

H. Mitarai (Aichi Steel Corporation)

T. Tomimoto (NICHIA Corporation)

Y. Asano (Daikin Industries, Ltd.)

REPM 2025

Steering Committee

O. Gutfleisch (TU Darmstadt, Germany)

N. Dempsey (Institut NEEL, CNRS, France)

K. Hono (NIMS, Japan)

J.B. Yang (Peking University, China)

L. Lewis (Northeastern University, USA)

International Advisory Committee

M. Manivel Raja (India)

M. Katter (Vacuumschmelze GmbH, Germany)

J. Buschbeck (Siemens AG, Germany)

D. Goll (Hochschule Aalen, Germany)

W. Lee (Yonsei University, Korea)

J.-G. Lee (Korea Institute of Materials Science, Korea)

M. Walmer (Electron Energy Corporation, USA)

J. Cui (Ames Laboratory, USA)

J.P. Liu (USA)

M. Yue (Beijing University of Technology, China)

A. Yan (Ningbo Institute of Material Technology and Engineering, China)

S.Z. Dong (Central Iron & Steel Research Institute, China)

T. Iriyama (Daido Steel Inc., Japan)

S. Sugimoto (Tohoku University, Japan)

P. Wendhausen (Federal University of Santa Catarina, Brazil)

S. Luca (CEA, France)

T. Schrefl (University for Continuing Education Krems, Austria)

D. Brown (UK)

E. Pang (MP materials, USA)

Honorary International Advisory Committee

M. Sagawa

M. Coey

G. Hadjipanayis

S. Kobe

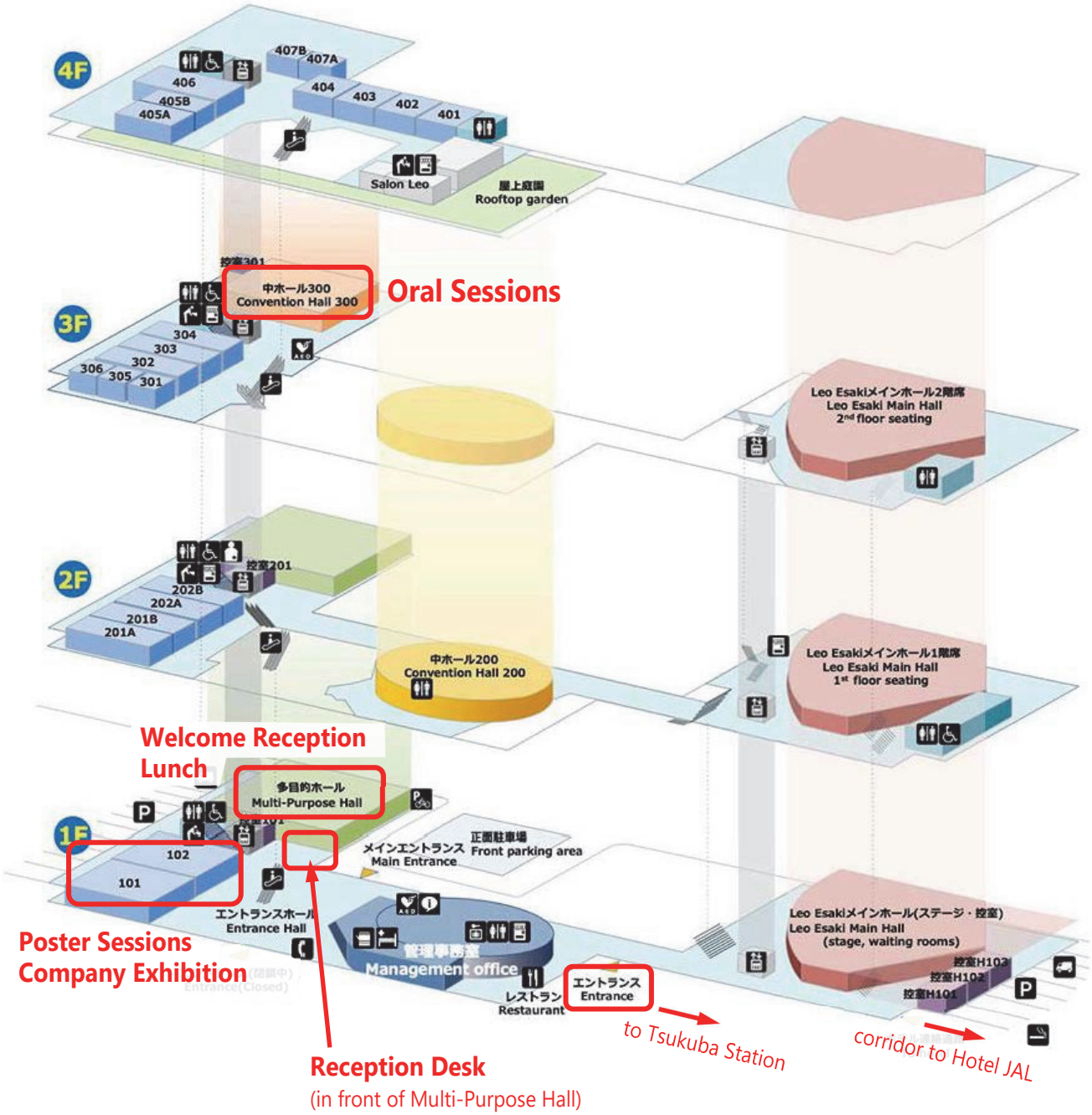
H. Fukunaga

VENUE

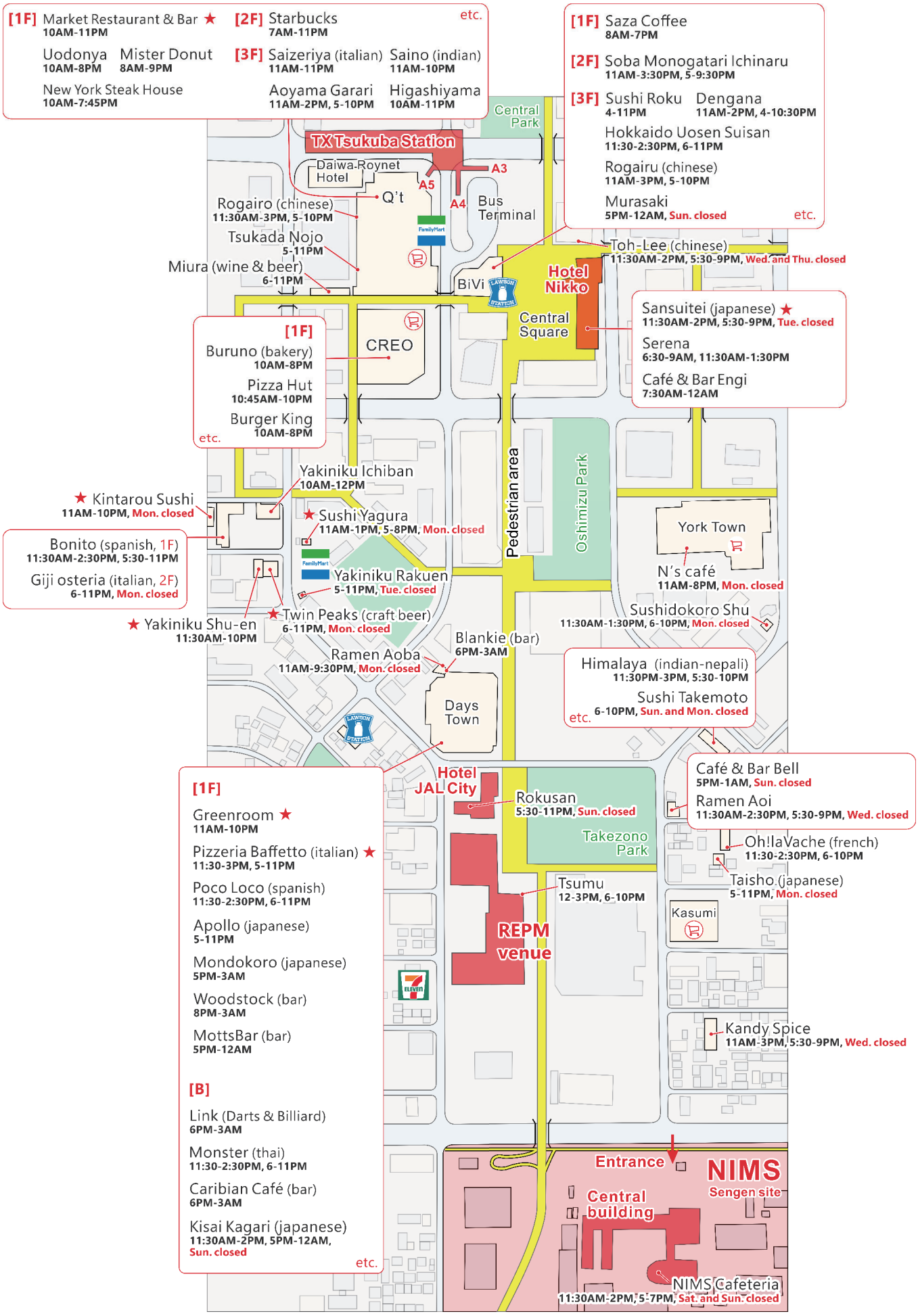
Tsukuba International Congress Center

2-20-3 Takezono, Tsukuba City, Ibaraki Prefecture 305-0032, Japan

Phone: 029-861-0001



TSUKUBA


[1F] Market Restaurant & Bar ★ 10AM-11PM
Uodonya 10AM-8PM
Mister Donut 8AM-9PM
New York Steak House 10AM-7:45PM
[2F] Starbucks 7AM-11PM
[3F] Saizeriya (italian) 11AM-11PM
Saino (indian) 11AM-10PM
Aoyama Garari 11AM-2PM, 5-10PM
Higashiyama 10AM-11PM
etc.
[1F] Saza Coffee 8AM-7PM
[2F] Soba Monogatari Ichinaru 11AM-3:30PM, 5-9:30PM
[3F] Sushi Roku 4-11PM
Dengana 11AM-2PM, 4-10:30PM
Hokkaido Uosen Suisan 11:30-2:30PM, 6-11PM
Rogairu (chinese) 11AM-3PM, 5-10PM
Murasaki 5PM-12AM, Sun. closed
etc.
Central Park
TX Tsukuba Station
Daiwa-Roynet Hotel
A3
A5
A4
Bus Terminal
Q't
Rogairo (chinese) 11:30AM-3PM, 5-10PM
Tsukada Nojo 5-11PM
Miura (wine & beer) 6-11PM
FamilyMart
BiVi
Toh-Lee (chinese) 11:30AM-2PM, 5:30-9PM, Wed. and Thu. closed
Hotel Nikko
Central Square
Sansuitei (japanese) ★ 11:30AM-2PM, 5:30-9PM, Tue. closed
Serena 6:30-9AM, 11:30AM-1:30PM
Café & Bar Engi 7:30AM-12AM
[1F]
Buruno (bakery) 10AM-8PM
Pizza Hut 10:45AM-10PM
Burger King 10AM-8PM
etc.
CREO
Yakiniku Ichiban 10AM-12PM
★ Kintarou Sushi 11AM-10PM, Mon. closed
Bonito (spanish, 1F) 11:30AM-2:30PM, 5:30-11PM
Giji osteria (italian, 2F) 6-11PM, Mon. closed
★ Sushi Yagura 11AM-1PM, 5-8PM, Mon. closed
Pedestrian area
Oshimizu Park
York Town
N's café 11AM-8PM, Mon. closed
Yakiniku Rakuen 5-11PM, Tue. closed
★ Twin Peaks (craft beer) 6-11PM, Mon. closed
★ Yakiniku Shu-en 11:30AM-10PM
Sushidokoro Shu 11:30AM-1:30PM, 6-10PM, Mon. closed
Blankie (bar) 6PM-3AM
Ramen Aoba 11AM-9:30PM, Mon. closed
Himalaya (indian-nepali) 11:30PM-3PM, 5:30-10PM
Sushi Takemoto 6-10PM, Sun. and Mon. closed
etc.
Days Town
[1F]
Greenroom ★ 11AM-10PM
Pizzeria Baffetto (italian) ★ 11:30-3PM, 5-11PM
Poco Loco (spanish) 11:30-2:30PM, 6-11PM
Apollo (japanese) 5-11PM
Mondokoro (japanese) 5PM-3AM
Woodstock (bar) 8PM-3AM
MottsBar (bar) 5PM-12AM
[B]
Link (Darts & Billiard) 6PM-3AM
Monster (thai) 11:30-2:30PM, 6-11PM
Caribian Café (bar) 6PM-3AM
Kisai Kagari (japanese) 11:30AM-2PM, 5PM-12AM, Sun. closed
etc.
Hotel JAL City
Rokusan 5:30-11PM, Sun. closed
Takezono Park
Café & Bar Bell 5PM-1AM, Sun. closed
Ramen Aoi 11:30AM-2:30PM, 5:30-9PM, Wed. closed
Oh!laVache (french) 11:30-2:30PM, 6-10PM
Taisho (japanese) 5-11PM, Mon. closed
Tsumu 12-3PM, 6-10PM
Kasumi
REPM venue
Kandy Spice 11AM-3PM, 5:30-9PM, Wed. closed
Entrance
NIMS Sengen site
Central building
NIMS Cafeteria 11:30AM-2PM, 5-7PM, Sat. and Sun. closed

PROGRAM OVERVIEW

Sunday, July 27

16:00 - 18:00	Registration and Welcome Reception	Multi-Purpose Hall, 1F

Monday, July 28

8:00 - 8:30	Registration	Multi-Purpose Hall, 1F
8:30 - 9:00	Welcome Address	Convention Hall, 300, 3F
9:00 - 10:35	**[O1] RE-Fe-B Magnets I**	Convention Hall, 300, 3F
10:35 - 10:55	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
10:55 - 12:20	**[O2] RE-Fe-B Magnets II**	Convention Hall, 300, 3F
12:20 - 13:30	Lunch	Multi-Purpose Hall, 1F
13:30 - 15:05	**[O3] Processing**	Convention Hall, 300, 3F
15:05 - 15:25	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
15:25 - 16:30	**[O4] Characterization**	Convention Hall, 300, 3F
16:30 - 18:00	**[P1] Poster Session**	Conference rooms 101 and 102, 1F

Tuesday, July 29

8:30 - 9:00	Registration	Multi-Purpose Hall, 1F
9:00 - 10:25	**[O5] RE-Fe-B Magnets III**	Convention Hall, 300, 3F
10:25 - 10:45	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
10:45 - 12:15	**[O6] Applications**	Convention Hall, 300, 3F
12:15 - 13:30	Lunch	Multi-Purpose Hall, 1F
13:30 - 14:55	**[O7] Raw Materials & Recycling I**	Convention Hall, 300, 3F
14:55 - 15:15	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
15:15 - 16:35	**[O8] Raw Materials & Recycling II**	Convention Hall, 300, 3F
16:35 - 18:00	**[P2] Poster Session**	Conference rooms 101 and 102, 1F

PROGRAM OVERVIEW

Wednesday, July 30

8:30 - 9:00	Registration	Multi-Purpose Hall, 1F
9:00 - 10:35	**[O9] RE Nitrides**	Convention Hall, 300, 3F
10:35 - 10:55	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
10:55 - 12:15	**[O10] Sm-based Magnets**	Convention Hall, 300, 3F
12:15 - 13:30	Lunch	Multi-Purpose Hall, 1F
13:30 - 14:35	**[O11] Emerging Magnets**	Convention Hall, 300, 3F
14:35 - 14:55	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
14:55 - 17:00	**[O12] RE-free Magnets**	Convention Hall, 300, 3F
17:00 - 17:15	**Group Photo**	Lobby, ground floor
18:00 - 20:00	**Conference Dinner**	Subaru (Banquet Hall), Annex Bldg.(1F) of Hotel NIKKO Tsukuba (1-1364-1 Azuma, Tsukuba)

Thursday, July 31

8:30 - 9:00	Registration	Multi-Purpose Hall, 1F
9:00 - 10:30	**[O13] Thin Films & High-throughput Experiments**	Convention Hall, 300, 3F
10:30 - 10:50	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
10:50 - 12:10	**[O14] Theory & Simulations**	Convention Hall, 300, 3F
12:10 - 13:30	Lunch	Multi-Purpose Hall, 1F
13:30 - 14:45	**[O15] AI & Machine Learning I**	Convention Hall, 300, 3F
14:45 - 15:05	Refreshments	(1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
15:05 - 16:10	**[O16] AI & Machine Learning II**	Convention Hall, 300, 3F
16:10 - 17:00	**Closing Remarks**	Convention Hall, 300, 3F

PROGRAM

Sunday, July 27

16:00 - 18:00	**Registration and Welcome Reception** Multi-Purpose Hall, 1F

Monday, July 28

8:00 - 8:30	**Registration** Multi-Purpose Hall, 1F
8:30 - 9:00	**Welcome Address** Convention Hall, 300, 3F
[O1] RE-Fe-B Magnets I Chair: Dr. Nora Dempsey	
9:00 - 9:30 **Plenary**	**[O1-1]** A critical review of permanent magnet materials: options for reduction, substitution and recycling of strategic elements | Oliver Gutfleisch (TU Darmstadt)
9:30 - 9:50 **Invited**	**[O1-2]** Recent advances in the development of high-performance HRE-free and RE-lean permanent magnets | H. Sepehri Amin (NIMS)
9:50 - 10:05	**[O1-3]** Diffusion of RE-rich alloys into NdFeB magnetic material produced via the hydrogen ductilisation process (HyDP) | Oliver Peter Brooks (University of Birmingham)
10:05 - 10:20	**[O1-4]** Fabrication of high-performance HREE-free hot-deformed Nd-Fe-B magnets | Ryosuke Goto (Daido Steel Co., Ltd)
10:20 - 10:35	**[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 Opelt (Fraunhofer IWKS)
10:35 - 10:55	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O2] RE-Fe-B Magnets II Chair: Prof. Oliver Gutfleisch	
10:55 - 11:15 **Invited**	**[O2-1]** Cost-effective manufacturing of nano-grain Neo magnet | Jun Cui (Ames National Laboratory)
11:15 - 11:35 **Invited**	**[O2-2]** Breaking performance limits in Nd-Fe-B magnets via extreme grain optimization and grain boundary diffusion synergy | Cong Wang (Yantai Zhenghai Magnetic Material Co., Ltd.)
11:35 - 11:50	**[O2-3]** Synthesis and magnetic properties of plate-type Nd-Fe-B magnets by electrically heated powder rolling | Jungryang Kim (AIST)
11:50 - 12:05	**[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 Lee (Korea Institute of Materials Science)
12:05 - 12:20	**[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 Kautsar (NIMS)
12:20 - 13:30	**Lunch** Multi-Purpose Hall, 1F

e-Program & Abstracts:

REPM 2025
Tsukuba, Japan

PROGRAM

[O3] Processing Chair: Prof. Jinbo Yang	13:30 - 13:50 **Invited**	**[O3-1]** Rare earth permanent magnets with high cerium content | Dagmar Goll (Aalen University)
	13:50 - 14:05	**[O3-2]** Effect of desorption treatment conditions for recombination on magnetic properties in (Nd,Ce)-Fe-B based HDDR magnet powders | Ryo Shimbo (Aichi Steel Corporation)
	14:05 - 14:20	**[O3-3]** Anisotropic spherical NdFeB powder obtained by hydrogenation, disproportionation, desorption, and recombination (HDDR) of a gas atomized powder | Jose Manuel Martin (CEIT-Basque Research and Technology Alliance)
	14:20 - 14:35	**[O3-4]** Grain boundary diffusion of gas-atomized Nd-Pr-Al-Cu powders on $Nd_2Fe_{14}B$-based magnets | Carter Tesch (Hoeganaes Corporation)
	14:35 - 14:50	**[O3-5]** Rapid sintering of microcrystalline Nd-Fe-B systems: Challenges and opportunities | Tomaž Tomše (Jožef Stefan Institute)
	14:50 - 15:05	**[O3-6]** A novel approach for sintering $Nd_2Fe_{14}B$-, $SmCo_5$- and Sm_2Co_{17}-based magnets by the HDDR process | Ihor I. Bulyk (Jiangxi University of Science and Technology)
	15:05 - 15:25	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O4] Characterization Chair: Dr. Matthew J. Kramer	15:25 - 15:45 **Invited**	**[O4-1]** Three-dimensional multimodal analyses on Nd-Fe-B magnets | Satoshi Okamoto (Tohoku University)
	15:45 - 16:00	**[O4-2]** 2D and 3D magnetic imaging of interaction domains in nanostructured $Nd_2Fe_{14}B$ using X-ray imaging techniques | Katharina Ollefs (University Duisburg-Essen)
	16:00 - 16:15	**[O4-3]** Exploring microstructural phenomena in rare earth magnets using atom probe tomography | Hansheng Chen (The University of Sydney)
	16:15 - 16:30	**[O4-4]** Unraveling the nanostructure and coercivity mechanism of single-phase $Ce(Co_{0.8}Cu_{0.2})_{5.4}$ hard magnet | Tatiana Smoliarova (University Duisburg-Essen)
	16:30 - 18:00	**[P1] Poster Session** Conference rooms 101 and 102, 1F

Tuesday, July 29

	8:30 - 9:00	**Registration** Multi-Purpose Hall, 1F
[O5] RE-Fe-B Magnets III Chair: Prof. Dagmar Goll	9:00 - 9:20 **Invited**	**[O5-1]** New insight into development of Pr-based grain boundary diffusion process for high-performance HRE-Free Nd-Fe-B Sintered Magnets | Tae-Hoon Kim (Korea Institute of Materials Science)
	9:20 - 9:40 **Invited**	**[O5-2]** Reduction of heavy rare earths in Nd-Fe-B-based magnets by diffusion source and application area optimization | Imants Dirba (TU Darmstadt)
	9:40 - 9:55	**[O5-3]** High coercivity of 2.8 T in HRE-free anisotropic magnets by microstructure engineering | Xin Tang (NIMS)
	9:55 - 10:10	**[O5-4]** Direct reduction of rare earth oxides to magnets | Matthew J. Kramer (Ames National Laboratory)
	10:10 - 10:25	**[O5-5]** Investigation on various selected area grain boundary diffusion approaches for Nd-Fe-B magnets | Xuhang Zhang (South China University of Technology)

PROGRAM

	10:25 - 10:45	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O6] Applications Chair: Dr. Yusuke Hirayama	10:45 - 11:05 **Invited**	**[O6-1]** High-speed and high-efficiency cooling fan motor with Nd-based bonded magnet and Fe-based nanocrystalline soft magnetic alloy | Kenji Nakamura (Tohoku University)
	11:05 - 11:20	**[O6-2]** Design studies on IPMSM with radially oriented arc-shaped metal magnet for automotive traction drives | Takanori Kajiwara (Daido Steel Co., Ltd.)
	11:20 - 11:35	**[O6-3]** Applications of permanent magnets at the National Synchrotron Light Source-II | Toshiya Tanabe (Brookhaven National Laboratory)
	11:35 - 11:55 **Invited**	**[O6-4]** Development of an active magnetic refrigerator for hydrogen liquefaction | Koji Kamiya (NIMS)
	11:55 - 12:15 **Invited**	**[O6-5]** Magnetic refrigeration from ambient temperature to hydrogen liquefaction: Bringing a technology to the market | Konstantin Skokov (TU Darmstadt)
	12:15 - 13:30	**Lunch** Multi-Purpose Hall, 1F
[O7] Raw Materials & Recycling I Chair: Prof. David Brown	13:30 - 13:50 **Invited**	**[O7-1]** Re-establishing mine-to-magnet manufacturing in the United States | Edward Pang (MP materials)
	13:50 - 14:10 **Invited**	**[O7-2]** Recent development in recycling of RE permanent magnets of the RE-Fe-B type: Challenges and solutions | Carlo Burkhardt (Pforzheim University)
	14:10 - 14:25	**[O7-3]** MagREEsource : the green Rare Earth Magnet company | Sophie Rivoirard (MagREEsource)
	14:25 - 14:40	**[O7-4]** Efficient recovery of rare earth elements from diluted magnet e-waste streams | Denis Prodius (Ames National Laboratory)
	14:40 - 14:55	**[O7-5]** Strategy for producing Nd-Fe-B permanent magnets with short-loop recycling methods for high-performance applications| Frederico Orlandini Keller (Orano Projets)
	14:55 - 15:15	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O8] Raw Materials & Recycling II Chair: Prof. Gopalan Raghavan	15:15 - 15:35 **Invited**	**[O8-1]** Rapidly quenched rare earth iron boride magnets | David Brown (University of Birmingham)
	15:35 - 15:50	**[O8-2]** Rapid quenching of nanocrystalline Nd-Fe-B materials for high performance magnets from recycled feedstock in industrial scale: Challenges and opportunities | Karsten Rachut (Heraeus Remloy)
	15:50 - 16:05	**[O8-3]** Tailoring the fraction of the RE rich phase in recycled powders obtained via jet milling | Marcelo Augusto Rosa (UFSC)
	16:05 - 16:20	**[O8-4]** Hydrogen plasma assisted recycling process of end-of-life Nd-Fe-B based permanent magnets | Rafael Gitti Tortoretto Fim (MPI SusMat)
	16:20 - 16:35	**[O8-5]** Preventing the downcycle: Removing epoxy resins from sintered NdFeB magnets for improved recycling | Anna Mary Dickinson-Lomas (University of Birmingham)
	16:35 - 18:00	**[P2] Poster Session** Conference rooms 101 and 102, 1F

e-Program & Abstracts:

REPM 2025
Tsukuba, Japan

PROGRAM

Wednesday, July 30

	8:30 - 9:00	**Registration** Multi-Purpose Hall, 1F
[O9] RE Nitrides Chair: Dr. Takahiko Iriyama	9:00 - 9:30 **Plenary**	**[O9-1]** Novel high frequency magnetic properties of rare earth-transitional metal intermetallic compounds | Jinbo Yang (Peking University)
	9:30 - 9:50 **Invited**	**[O9-2]** Process development of high-performance Sm-Fe-N permanent magnet | Yusuke Hirayama (AIST)
	9:50 - 10:05	**[O9-3]** Particle size effects on degree of alignment in Ba-Cu doped $Sm_2Fe_{17}N_3$ sintered magnets | Yuta Iida (Niterra Co., Ltd)
	10:05 - 10:20	**[O9-4]** Effect of Mn doping on the synthesis and properties of nearly spherical $Sm_2Fe_{17}N_3$ powders | Shenglei Che (Zhejiang University of Technology)
	10:20 - 10:35	**[O9-5]** Low temperature densification of $Nd(Fe,Mo)_{12}$ nitrided samples | Sorana Luca (University Grenoble Alpes)
	10:35 - 10:55	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O10] Sm-based Magnets Chair: Prof. Satoshi Sugimoto	10:55 - 11:15 **Invited**	**[O10-1]** Phase transition in Sm-Co and its interesting phenomena | Hubin Luo (Ningbo Institute of Materials Technology and Engineering)
	11:15 - 11:30	**[O10-2]** Composition dependence on magnetic properties and phase changes of $TbCu_7$-type Sm-Fe-Co-Nb-B alloys | Masashi Matsuura (Tohoku University)
	11:30 - 11:45	**[O10-3]** Study of magnetization reversal and magnetic hardening in $SmCo_5$ single crystal magnet | Alex Aubert (TU Darmstadt)
	11:45 - 12:00	**[O10-4]** Preparation of magnetically alignable Sm-Co alloy nanoparticles by wet-jet milling | Kwangjae Park (AIST)
	12:00 - 12:15	**[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 Sm_2Co_{17}-type magnets | Chuanghui Dong (Ningbo Institute of Materials Technology and Engineering)
	12:15 - 13:30	**Lunch** Multi-Purpose Hall, 1F
[O11] Emerging Magnets Chair: Dr. Konstantin Skokov	13:30 - 13:50 **Invited**	**[O11-1]** Origin of high coercivity in post-sinter annealed Cu-doped $Sm(Fe,Ti,V)_{12}$-based sintered magnets | Jiasheng Zhang (NIMS)
	13:50 - 14:05	**[O11-2]** The effect Ag on phase transformation and magnetic properties in $SmFe_{12}$-based composition | Pelin Tozman (TU Darmstadt)
	14:05 - 14:20	**[O11-3]** Additive manufacturing of hard magnetic materials $Nd_2Fe_{14}B$ and $Sm(Fe,Ti,V)_{12}$ | Alexey Volegov (Ural Federal University)
	14:20 - 14:35	**[O11-4]** In-Depth investigation of the sub-micronic equiaxed grain microstructure of a NdFeB permanent magnet fabricated by Laser Powder Bed Fusion | Aymeric Wolz (French Alternative Energies and Atomic Energy Commission)
	14:35 - 14:55	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F

e-Program & Abstracts:

REPM 2025
Tsukuba, Japan

PROGRAM

[O12] RE-free Magnets
Chair: Prof. Yukiko Takahashi

14:55 - 15:15 **Invited**	**[O12-1]** Do we really need a gap magnet? | J. M. D. Coey (Trinity College Dublin)
15:15 - 15:30	**[O12-2]** Rare-earth free MnBi magnets: Recent developments in combining severe plastic deformation with thermomagnetic processing | K.S. Anand (Erich Schmid Institute)
15:30 - 15:45	**[O12-3]** Hot compacted MnAl-type magnets: Bi-bonding and corrosion response | Semih Ener (TU Darmstadt)
15:45 - 16:00	**[O12-4]** Discovery of stable tetragonal phase in Mn-Al-Cu ternary system | Tomohito Maki (Proterial, Ltd.)
16:00 - 16:15	**[O12-5]** High pressure consolidation for advanced ferrite permanent magnets | César de Julian Fernandez (Institute of Materials for Electronics and Magnetism - CNR)
16:15 - 16:30	**[O12-6]** Tailoring the magnetic properties of nanostructured Ce- and Mn-substituted Sr-hexaferrite | Adrian Fernandez-Calzado (IMDEA Nanoscience)
16:30 - 17:00 **Plenary**	**[O12-7]** Nd-Fe-B magnets: Young researchers innovate and veterans improve | Masato Sagawa (Daido Steel Co., Ltd.)
17:00 - 17:15	**Group Photo** Lobby, ground floor
18:00 - 20:00	**Conference Dinner** Subaru (Banquet Hall), Annex Bldg.(1F) of Hotel NIKKO Tsukuba (1-1364-1 Azuma, Tsukuba)

Thursday, July 31

8:30 - 9:00	**Registration** Multi-Purpose Hall, 1F

[O13] Thin Films & High-throughput Experiments
Chair: Prof. Satoshi Okamoto

9:00 - 9:20 **Invited**	**[O13-1]** Thin film combinatorial studies of hard magnetic materials | Nora Dempsey (Institut Néel, CNRS)
9:20 - 9:40 **Invited**	**[O13-2]** Thin film model study for developing new permanent magnetic material | Yukiko Takahashi (NIMS)
9:40 - 10:00 **Invited**	**[O13-3]** Magnetic hardening in low-dimensional magnets | J. Ping Liu (University of Texas at Arlington)
10:00 - 10:15	**[O13-4]** Enhancement of thermal stability of $Sm(Fe\text{-}Co)_{12}$-B thin films by cap layer deposition and post-annealing | Yuichi Mori (Tohoku Gakuin University)
10:15 - 10:30	**[O13-5]** A high throughput study of element substitution in NdFeB-based films combined with heavy rare-earth diffusion | William Rigaut (University Grenoble Alpes)
10:30 - 10:50	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F

PROGRAM

[O14] Theory & Simulations Chair: Prof. Thomas Schrefl	10:50 - 11:10 **Invited**	**[O14-1]** Micromagnetic and reduced-order model simulations of the impact of microstructural defects on the coercivity of recycled $Nd_2Fe_{14}B$ magnets | Johann Fischbacher (University for Continuing Education Krems)
	11:10 - 11:25	**[O14-2]** Micromagnetic simulations of hot-deformed Nd-Fe-B magnets subjected to eutectic grain boundary diffusion process | Anton Bolyachkin (NIMS)
	11:25 - 11:40	**[O14-3]** Grain shape and crystal reconstruction prediction of magnetic nanoparticles | Gino Hrkac (University of Exeter)
	11:40 - 11:55	**[O14-4]** Phase-field simulation of liquid-phase sintering coupled with a CALPHAD database of Nd-Fe-B-Cu system | Akimitsu Ishii (NIMS)
	11:55 - 12:10	**[O14-5]** First-principles calculation of magnetocrystalline anisotropy in rare-earth-containing $RE_2Fe_{14}B$ alloys | Haruki Okumura (AIST)
	12:10 - 13:30	**Lunch** Multi-Purpose Hall, 1F
[O15] AI & Machine Learning I Chair: Prof. Gino Hrkac	13:30 - 14:00 **Plenary**	**[O15-1]** Artificial intelligence assisted optimization of permanent magnets | Thomas Schrefl (University for Continuing Education Krems)
	14:00 - 14:15	**[O15-2]** The possibility of new complex magnet materials | Jeff Snyder (ARPA-E and Northwestern University)
	14:15 - 14:30	**[O15-3]** Deep-learning-assisted micromagnetic model development for Ga-doped Nd-Fe-B magnet | Nikita Kulesh (NIMS)
	14:30 - 14:45	**[O15-4]** Artificial intelligence to support permanent magnet research and development – Intrinsic magnetic properties and microstructure analysis | Gerhard Schneider (Aalen University)
	14:45 - 15:05	**Refreshments** (1) In front of Convention Hall, 300, 3F (2) Conference rooms 101 and 102, 1F
[O16] AI & Machine Learning II Chair: Dr. Anton Bolyachkin	15:05 - 15:25 **Invited**	**[O16-1]** Enhancing research and development efficiency through decision-making based on experimental data feature extraction | Masao Yano (Toyota Motor Corporation)
	15:25 - 15:40	**[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 | Lanting Zhang (Shanghai Jiao Tong University)
	15:40 - 15:55	**[O16-3]** Graph neural networks to predict coercivity of hard magnetic microstructures | Heisam Adam Moustafa (University for Continuing Education Krems)
	15:55 - 16:10	**[O16-4]** Optimization of a permanent magnet with uncertainty control | Clemens Wager (Christian Doppler Laboratory for magnet design through physics informed machine learning)
	16:10 - 17:00	**Closing Remarks** Convention Hall, 300, 3F

e-Program & Abstracts:

REPM 2025
Tsukuba, Japan

POSTER SESSIONS

[P1] RE-Fe-B Magnets – Monday, July 28, 16:30 - 18:00

Red zone, Conference rooms 101 and 102, 1F

[P1-1]	High performance HREE-free hot-deformed Nd-Fe-B magnets by Nd-Cu grain boundary diffusion | Kazumasa Fujimura (Daido Steel Co., Ltd)
[P1-2]	Development of heavy rare-earth, Co-free Nd-Fe-B injection molded anisotropic bonded magnet with high corrosion resistance | Kazuaki Shimba (Aichi Steel Corporation)
[P1-3]	Impact of the RFe_2 phase in Ce-containing magnets on annealing optimization and magnetic performance | Yunqiao Wang (Beijing Zhong Ke San Huan Research)
[P1-4]	Coercivity enhancement and synergistic suppression of $CeFe_2$ phase in Ce magnets with high Ce content | Minggang Zhu (AT&M North Technology Co.,Ltd)
[P1-5]	Enhanced magnetic properties and microstructural characterization of hot-deformed (Ce,La)-Fe-B magnets with eutectic alloy incorporation | Kyungmi Lee (Yonsei University)
[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 Lee (Korea Institute of Materials Science)
[P1-7]	Microstructural optimization and coercivity enhancement in Nd-Ce-Fe-B magnets through grain boundary diffusion of Pr-La mixed alloy | Ye Ryeong Jang (Yonsei University)
[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 Prokofev (Baikov Institute of Metallurgy and Materials Science)
[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 Kou (South China University of Technology)
[P1-10]	A macroscopic perspective on the sintered Nd-Fe-B magnets prepared by Tb grain boundary diffusion | Jinghui Di (Hangzhou Magmax Technology Co., Ltd.)
[P1-11]	Regulation of grain boundary structure in NdFeCoB magnets through grain boundary diffusion of DyAlCu alloy | Shengzhi Dong (Central Iron & Steel Research Institute)
[P1-12]	Coercivity enhancement of Nd-Fe-B sintered magnet through grain boundary restructuring using $Dy_{80}Ga_{20}$ eutectic alloy | Paulraj S. (International Advanced Research Centre for Powder Metallurgy and New Materials)
[P1-13]	Nb assisted grain boundary pinning in Nd-Cu diffused Nd-Fe-B magnets for enhancing the Coercivity | Gopalan Raghavan (International Advanced Research Centre for Powder Metallurgy and New Materials)
[P1-14]	Effects of trace elements on the grain boundary diffusion of sintered NdFeB magnets | Chaochao Zeng (South China University of Technology)
[P1-15]	Effect of coating methods on the magnetic properties of grain boundary diffusion processed Nd-Fe-B sintered magnets | Jaehyuk Kim (Yonsei Univ.)
[P1-16]	Magnetization reversal of core-shell structured grain of GBDP Nd-Fe-B sintered magnet | Weixing Xia (Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences)
[P1-17]	Novel aspects in Nd-Fe-B grain boundary engineering: Integrating (electro)chemistry and materials science | Kristina Zuzek (Jozef Stefan Institute)
[P1-19]	Features of the magnetization reversal processes in sintered permanent magnets Nd-Fe-B and Sm-Co type | Andrey Urzhumtsev (Ural Federal University)
[P1-20]	Potential of cryogenic treatment applications on rare-earth-based functional magnetic materials | Rafael Gitti Tortoretto Fim (MPI-SusMat)

POSTER SESSIONS

[P1] RE-Fe-B Magnets – Monday, July 28, 16:30 - 18:00

Green zone, Conference rooms 101 and 102, 1F

[P1-21] Coercivity enhancement of HDDR anisotropic Nd-Fe-B magnetic powder | Jingzhi Han (Peking University)

[P1-22] Use the HDDR and GBDP approaches to produce hot-deformed Nd-Fe-B magnets | Sujuan Wang (Jiangxi University of Science and Technology)

[P1-23] $Nd_2Fe_{14}B$ magnets sintered by the HDDR process: The first results | Renhui Liu (Jiangxi University of Science and Technology)

[P1-24] Influence of the Nd-rich phase when processing Nd-Fe-B through the Hydrogen Ductilisation Process (HyDP) | Patrick Powell (University of Birmingham)

[P1-25] Synthesis of fine $(Nd,Ce)_2Fe_{14}B$ powders *via* the reduction-diffusion process for fabricating Ce-substituted Nd-Fe-B sintered magnets | Jeong Hyun Kim (Seoul National University of Science and Technology)

[P1-26] A novel methods to fabricate fine-grained Nd-Fe-B sintered magnets: reduction-diffusion & pressless process | Sumin Kim (Korea Institute of Materials Science)

[P1-27] Fabrication of fine-grained Nd-Fe-B anisotropic magnets using single-crystalline particles synthesized by reduction-diffusion process | Keunki Cho (Korea Institute of Materials Science)

[P1-28] Recycling of waste Nd-Fe-B sintered magnets *via* Ca-reduction and two-step washing process | Seol-mi Lee (Korea Institute of Materials Science)

[P1-29] Remanufacture of sintered NdFeB magnets via recasting high dysprosium content end-of- life magnets | Oliver Peter Brooks (University of Birmingham)

[P1-30] Magnetic properties and recovery rate of recycling hundred-kilogram-scale NdFeB sintered magnets with the improved short-loop recycling process | Chih-Chieh Mo (SPIN Sustainable Energy Industry Corporation)

[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 Macedo (Federal University of Santa Catarina)

[P1-32] Cyclone separation of hydrogen processed NdFeB magnets for improved properties | Viktoria Kozak (University of Birmingham)

[P1-33] Study of microstresses in sintered NdFeB magnets and their effects on magnetic properties | Shengen Guan (University of Science and Technology Beijing)

[P1-34] Development of Nd-Fe-B multi-pole magnetized ring magnets with high magnetic properties | Haruhiro Komura (Minebea Mitsumi Inc.)

[P1-35] Magnetization reversal behavior of die-upset Nd-Fe-B magnets with heterogenous microstructure | Harim Choi (Nagoya University)

[P1-36] Effect of gallium alloying on hysteresis properties of the Re-(Fe,Co)-Ga-B permanent magnets | Andrey Vladimirovich Protasov (M.N. Mikheev Institute of Metal Physics, UB RAS)

[P1-37] Coercivity enhancement of hot deformed NdFeB magnets by doping multicomponent Ce-Tb-Pr-Al-Zn alloys | Huang Wei Chang (National Chung Cheng University)

[P1-38] Improvement of H_k and squareness in *d*-HDDR-treated Nd-Fe-B powders prepared using modified starting powder | Takashi Horikawa (Aichi Steel Corporation)

POSTER SESSIONS

[P1] Applications – Monday, July 28, 16:30 - 18:00

Blue zone, Conference rooms 101 and 102, 1F

[P1-39] Dynamic evaluation in motors of variable magnetic flux magnets | Kenji Takeda (TDK Corporation)

[P1-40] High magnetic flux rotor core for IPM motor through partial non-magnetic improvement of silicon steel | Norihiko Hamada (Aichi Steel Corporation)

[P1-41] Development of 200,000 rpm SPM small motor using rare earth anisotropic bonded magnets | Chisato Mishima (MagDesign Corporation)

[P1-42] A new magnetization method that supports high-performance magnets applied to IPMSMs for EV/HEV and new motors such as spoke type motor | Michitaka Hori (Nihon Denji Sokki Co., LTD.)

[P1-43] Advantages of manufacturing radially oriented ring magnets through hot forming and the impact on electrical machines | Martin Krengel (WILO SE)

[P1-44] Design considerations for post assembly magnetising of permanent magnet rotors | Matthew Joseph Swallow (Bunting Magnetics Ltd)

[P1-45] Formation of ferromagnetic clusters affecting the first-order phase transition in off-stochiometric Fe-Rh | Alex Aubert (TU Darmstadt)

[P1-46] A compact 4 Tesla permanent magnet field source with reduced structural complexity | Min Zou (Lab Magnetics Inc.)

[P1-47] Development strategy of Fe-Cr-Co alloy powder for high-performance microwave absorbers and noise suppression sheets | Saijian Ajia (Tohoku University)

[P1-48] Development of $RE_2(Fe,Co)_{14}B$ (RE = rare-earth) compounds for transverse thermoelectric applications | Babu Madavali (NIMS)

[P1-49] Coercivity mechanism of rare earth-free Cr substituted $Mn_{1-x}Cr_xAlGe$ for "thermoelectric permanent magnet" applications | Andres Martin-Cid (NIMS)

[P1] Processing, Characterization and Thin Films – Monday, July 28, 16:30 - 18:00

Yellow zone, Conference rooms 101 and 102, 1F

[P1-50] Optimization of processing parameters for high-performance anisotropic bonded magnets | Ikenna C. Nlebedim (Ames National Laboratory)

[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 Matsuura (Research Institute for Applied Sciences)

[P1-52] Anisotropy field measurement in hard magnets: Evaluating current methodologies | Alex Aubert (TU Darmstadt)

[P1-53] Angular dependence of coercivity and flux loss under tilted field in Nd-Fe-B sintered magnet | Hitoshi Yamamoto (Neoji-consul)

[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 Cornelius (Hirst Magnetic Instruments Ltd)

[P1-55] Measuring initial curves and minor hysteresis loops for rare earth magnets using the Pulsed Field Magnetometer (PFM) system | Robin Cornelius (Hirst Magnetic Instruments Ltd)

POSTER SESSIONS

[P1-56] Spectroscopic insights into the electronic structure of non-critical rare earth containing permanent magnets | Benedikt Eggert (University of Duisburg- Essen)

[P1-57] Three-dimensional magnetic domain propagation of a Nd-Fe-B hot-deformed magnet | Tomomi Suwa (Tohoku University)

[P1-58] A new perspective on assessing the magnetic texture in Nd-Fe-B magnets: The influence of coercivity | Wagner Costa Macedo (Federal University of Santa Catarina)

[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 Xin (USTB)

[P1-60] Bioinspired design, fabrication, and wing morphing of 3D-printed magnetic butterflies | Oliver Gutfleisch (TU Darmstadt)

[P1-61] Phase composition and magnetic properties of $Nd(Pr)_2Fe_{14}B$ and $(Sm,Zr)Fe_{11}Ti$ magnets produced by selective laser melting | Viktoria Maltseva (Ural Federal University)

[P1-62] Grain alignment by single track printing using anisotropic sintered Nd-Fe-B magnet as a substrate | Lanting Zhang (Shanghai Jiao Tong University)

[P1-63] Microstructural investigation of Nd-Fe-B magnets fabricated by laser powder bed fusion | Hojeong Kim (Yonsei University)

[P1-64] From scrap to bonded magnet: Exploring nanocrystalline recycled powders in additive manufacturing | Marcelo Augusto Rosa (UFSC)

[P1-65] Enhancing the Printability of Nd-Fe-B Feedstocks for Laser Powder Bed Fusion | Paulo Wendhausen (UFSC)

[P1-66] Preparation of micromagnets via LIFT technique | Masaki Nakano (Nagasaki University)

[P1-67] Sputtered high-coercivity CeCo thin film on glass substrate | An-Cheng Aidan Sun (Yuan Ze University)

[P1-68] Growth of $SmFe_{12}$ thin films using MBE | Uyanga Enkhnaran (Institute of Physics and Technology of Mongolian Academy of Sciences)

[P1-69] Development of data handling tools for high-throughput experiments | Pierre Le Berre (Institut Néel)

[P1-70] Towards the high-throughput microstructural characterisation of compositionally graded NdFeB-based films | Lukas Fink (Institut Néel)

[P1-71] Characterization of rare earth garnet $[Eu_3Fe_5O_{12}/Tb_3Fe_5O_{12}]/Gd_3Ga_5O_{12}$ (111) ([EuIG/TbIG]/GGG (111)) thin films | Ko-Wei Lin (National Chung Hsing University)

[P1-73] Effect of Ir addition on the crystal structure and magnetic properties for Mn-Ga thin films | Yuto Yamazaki (Tohoku Gakuin University)

[P1-74] Magnetocaloric effect of textured polycrystalline RNi_5 alloys | Iurii Koshkidko (Institute of Low Temperature and Structure Research, PAS)

[P1-75] The influence of phosphorization treatment on the high-temperature oxidation resistance of Nd-Fe-B magnetic powder | Jingwu Zheng (Zhejiang University of Technology)

POSTER SESSIONS

[P2] AI, Simulations & Theory – Tuesday, July 29, 16:35 - 18:00

Red zone, Conference rooms 101 and 102, 1F

[P2-2]	Atomistic model study on thermodynamic properties of $(Nd_{1-x}Dy_x)_2Fe_{14}B$ and dysprosium substitution effect on coercivity in neodymium permanent magnets | Masamichi Nishino (NIMS)
[P2-3]	Multi-objective optimization of magnet compositions by machine learning | Hyuga Hosoi (Toyota Motor Corporation)
[P2-4]	Machine learning links X-ray diffraction to coercivity and phase analysis | Qais Ali (Christian Doppler Laboratory for magnet design through physics informed machine learning)
[P2-5]	Accelerated discovery of rare-earth-free permanent magnets through high-throughput computation | Md Junaid Afsar Jami (IIT Bombay)
[P2-6]	Machine learning guided design of high-performance RE-Fe-B with abundant rare earth substitution | Zheng Wang (Institute of Physics CAS)
[P2-7]	Low-cobalt/gallium high-performance Nd-Fe-B permanent magnets discovered by machine-learning based modeling | Zhaozhe Zhong (Toyota Motor Technical Research and Service (Shanghai) Co., Ltd.)
[P2-8]	Magnetic crystal reconstruction and optimisation using Graph Neural Networks | Gino Hrkac (University of Exeter)
[P2-9]	The establishment of a microstructural evaluation system in sintered NdFeB magnets via computer vision technology | Zihao Wang (University of Science and Technology Beijing)
[P2-10]	Effective fine-tuning of image generative AI on FePt microstructures using the phase-field method | Toshiyuki Koyama (Nagoya University)
[P2-11]	Phase equilibria in Nd-based sintered magnets with Carbon | Taichi ABE (NIMS)
[P2-12]	Solidification-induced strains in sintered Nd-Fe-B magnets and their impact on coercivity | Oleksandr Hrushko (University for Continuing Education Krems)
[P2-13]	Modelling of hard magnetic materials from density functional theory | Miroslaw Werwinski (Institute of Molecular Physics, Polish Academy of Sciences)
[P2-14]	Terbium under high pressure: First-principles density functional theory and dynamical mean-field theory studies | Cheng-Chien Chen (University of Alabama at Birmingham)
[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 Dey (IIT Kharagpur)
[P2-16]	Magnetic and magnetocaloric effect on the high entropy alloys $(Y_{0.2}La_{0.2}Gd_{0.2}Pr_{0.2}Er_{0.2})Al_2$ and $(Y_{0.2}La_{0.2}Nd_{0.2}Pr_{0.2}Er_{0.2})Al_2$ | Bruno Alho (Rio de Janeiro State University)
[P2-17]	Magnetothermal and magnetocaloric properties of $Er_{1-x}Tm_xAl_2$ series compounds | Paula Ribeiro (Rio de Janeiro State University)
[P2-18]	Demagnetization process of $Sm(FeCo)_{12}$/α-Fe grains with a gradient structure | Kunihiro Koike (Yamagata University)

POSTER SESSIONS

[P2] Raw Materials & Recycling – Tuesday, July 29, 16:35 - 18:00

Green zone, Conference rooms 101 and 102, 1F

[P2-19]	Promoting sustainability in permanent magnets: The role of Product Category Rules (PCR) in rare earth supply chains | Neda Bahremandi Bahremandi (Rare Earth Industry Association)
[P2-20]	Metallothermic reduction of neodymium chloride: A strategic route for high-purity neodymium metal for NdFeB magnets | Purushotham Yadoji (Centre for Materials for Electronics Technology)
[P2-21]	Effect of milling on particle size and magnetic properties of recycled $Nd_2Fe_{14}B$ alloy powder | Purushotham Yadoji (Centre for Materials for Electronics Technology)
[P2-22]	Melting and solidification behavior of oxidized Nd-Fe-B powder upon plasma spheroidizing | Natalia Kolchugina (IMET RAS)
[P2-23]	Uranium in-situ leaching liquors are a potential source of "magnetic" REE | Vladimir Rychkov (Ural Federal University)
[P2-24]	Creation and development of technologies for producing rare-earth metals «Giredmet» for use in various industrial areas | Vitalii Sanin
[P2-25]	Investigation of oxidation behaviour and passivation rates for recycled hydrogen processed NdFeB powder | Safiyah Hussain (University of Birmingham)
[P2-26]	Facile all-elements recycling of HRE-containing Nd-Fe-B magnet sludge by reduction- diffusion with CaH_2 | Vitalii Galkin (Daegu Gyeongbuk Institute of Science and Technology)
[P2-27]	Tailoring magnetic properties of short loop recycled NdFeB magnets via powder blending | Joseph Gresle Farthing (HyProMag)
[P2-28]	Short loop recycling of sintered NdFeB magnets from auxiliary automotive motors utilising HPMS | Abeshaa Mahendran (HyProMag)
[P2-29]	Recycling of NdFeB magnets from hard disc drive scrap using HPMS and using recycled magnets in an automotive auxiliary motor | Muhammad Awais (University of Birmingham)
[P2-30]	Hydrogen processed NdFeB scraps: Evolution of properties under mechanical ball milling | César de Julian Fernandez (Institute of Materials for Electronics and Magnetism)
[P2-31]	Investigations on the slag extraction method for pyrometallurgical REE recycling from sintered and bonded NdFeB magnets using borate slags | Daniel Vogt (TU Bergakademie Freiberg)
[P2-32]	Boosting the coercivity of the Nd-Fe-B alloy recovered from oxidized scrap magnets | Paulo Antônio Pereira Wendhausen (UFSC)
[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 (Fraunhofer IWKS)
[P2-34]	Nitric acid technology for processing magnetic production waste | Sergey Kirillov (Ural Federal University)

POSTER SESSIONS

[P2] Sm-based Magnets & Nitrides – Tuesday, July 29, 16:35 - 18:00

Blue zone, Conference rooms 101 and 102, 1F

[P2-35]	Nanoscale structural and chemical insights into the magnetic performance of SmCo permanent magnets | Esmaeil Adabifiroozjaei (TU Darmstadt)
[P2-36]	Microstructural building blocks governing the high-coercivity state in SmCo-based magnets: Searching for the "Weak link" and the "Perfect defect" | Konstantin Skokov (TU Darmstadt)
[P2-37]	Enhancing ferromagnetism in the $Sm(Co,Mn)_5$ system: Impact on phase stability and magnetic properties | Hongguo Zhang (Beijing University of Technology)
[P2-38]	The effect of Fe, Ni substitution on structural and magnetic properties of $SmCo_5$ magnets | Enbang Ti (University of Birmingham)
[P2-39]	Magnetic properties of $(Sm,Y)Fe_2Co_2B$ melt-spun ribbons | Tetsuji Saito (Chiba Institute of Technology)
[P2-40]	Study on the reduction of high-temperature flux loss in Sm_2Co_{17} permanent magnets | Bo Zhou (Ningbo Institute of Materials Technology and Engineering, CAS)
[P2-41]	Strip casting of SmCo alloys to reduce manufacture costs of $Sm_2(Co,Fe,Zr,Cu)_{17}$ permanent magnets | Charlie Lyle Gormly Gardner (University of Birmingham)
[P2-42]	Effects of thermal damage and thermal demagnetisation on the hydrogen decrepitation behaviour of Sm_2TM_{17} sintered magnets | James Thomas Griffiths (University of Birmingham)
[P2-43]	Maximizing the extrinsic magnetic properties of SmCoB-based compounds | Pelin Tozman (TU Darmstadt)
[P2-44]	High-performance exchange-coupled rare-earth hard magnetic nano-composite ribbons: Processing, properties and applications | Shampa Aich (IIT Kharagpur)
[P2-45]	Expansion of the STEP method to magnetically isotropic magnets | Kurima Kobayashi (Ritsumeikan University)
[P2-46]	The correlation between the coercivity and microstructure of the novel 1-12-type sintered magnet under high molding pressure | Tomoko Kuno (Ritsumeikan University)
[P2-47]	Investigation of multiscale structural and compositional optimization on magnetic properties in $ThMn_{12}$-type permanent magnets | Hui-Dong Qian (Peking University)
[P2-48]	A novel approach to fabricate Sm-Co micro-magnets and its microstructure | Taisuke Sasaki (NIMS)
[P2-49]	Fabrication of Sm-Co-Fe-Cu-Zr and $SrFe_{12}O_{19}$ based permanent magnets by PIM- technology and stereolithography methods | Bogdan Dmitrievich Chernyshev (Giredmet JSC)
[P2-50]	Ultrafine $Sm_2Fe_{17}N_3$ hard magnetic particles synthesized by mechanochemical process | Zhi Yang (Beijing University of Technology)
[P2-51]	Production of $Sm_2Fe_{17}N_3$ magnets from fine powder produced from reduction diffusion method | Akihide Hosokawa (AIST)
[P2-52]	Effect of $Sm_2Fe_{17}N_3$ fine powder obtained by jet milling on magnetic properties | Teruta Inoue (Niterra Co., Ltd.)
[P2-53]	Effect of Bi addition on decomposition temperature of Sm-Fe-N | Shusuke Okada (AIST)

POSTER SESSIONS

[P2-54] Temperature-mediated in situ synthesis of Γ-FeZn phase and its coercivity enhancement mechanism in Sm-Fe-N magnets | Dongsheng Shi (Zhejiang University of Technology)

[P2-55] An attempt to lower melting point of sintering aids for low temperature sintering of $Sm_2Fe_{17}N_3$ magnets | Tatsuya Shiratori (Niterra Co., Ltd.)

[P2-56] Rapid preparation of $Sm_2Fe_{17}N_3$ fine powder by cryo-milling | Qiang Gao (Peking University)

[P2-57] Surface engineering to improve coercivity of $Sm_2Fe_{17}N_3$ powder | Wataru Yamaguchi (AIST)

[P2-58] Crystal structure and magnetic properties of Yb_2Fe_{17} and $Yb_2Fe_{17}N_x$ | Tao Zhu (Peking University)

[P2-59] Enhanced coercivity in $Sm(Fe_{0.8}Co_{0.2})_{11-x}TiCu_x$ strips through grain boundary phase optimization | Hai Bo Feng (CISRI)

[P2-60] Influence of Cobalt on the Coercivity of $Sm(Fe,Ti,V)_{12}$-based Magnets | Toni Subagja (NIMS)

[P2] RE-free Magnets – Tuesday, July 29, 16:35 - 18:00

Yellow zone, Conference rooms 101 and 102, 1F

[P2-61] MnAl spherical magnetic particles with stacked twin crystal structure and their sintered magnets | Koji Naito (AGC Corp.)

[P2-62] Mn-Al-C efficient powder nanostructuring by fast cryogenic milling | Jorge Vergara Vergara Ortega (IMDEA nanociencia)

[P2-63] Low-temperature-phase MnBi nanocomposite magnets for rare-earth-free permanent magnet applications | Jian Wang (AIST)

[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 Mishra (IIT Jodhpur)

[P2-65] Synthesis of La-Co highly co-substituted M-type Sr ferrite under high oxygen pressure using hot isostatic pressurization method | Takeshi Waki (Kyoto University)

[P2-66] Ferrite-based recycled magnets without or with less critical raw materials for electric motor application | Petra Jenus Belec (Jožef Stefan Institute)

[P2-67] Synthesis of re/upcycled Sr-ferrite permanent magnets from mill scale | Duru Kalkavan (NANOTerial Technology Corporation)

[P2-68] Green synthesized cobalt ferrite: On cancer tumor hyperthermia and targeting therapy | An-Cheng Aidan Sun (Yuan Ze University)

[P2-69] Iron nitride $Fe_{16}N_2$: Intrinsic properties, synthesis, stability and bulk magnets | Imants Dirba (TU Darmstadt)

[P2-70] Hard magnetic and critical raw materials free permanent magnets on the basis of the Fe_2P system | Jürgen Gassmann (Fraunhofer IWKS)

[P2-71] Temperature dependent magnetic properties rare earth free Fe_4CoSi permanent magnet | Jisang Hong Hong (Pukyong National University)

BQD®

SINCE 2010

Baiqida Intelligent Technology (Ningbo)Co.,Ltd

Experts specializing in permanent magnet materials (NdFeB Materials)

HIGH -QUALITY PRODUCTS PLUS SUPER SERVICES MAKE BQD!

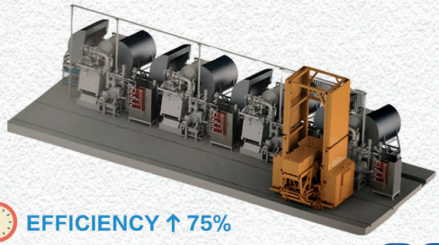
No CIP needed

01

ALL-ELECTRIC MAGNETIC FIELD FORMING PRESS

02

ALL-ELECTRIC AUTOMATIC PALLETIZING PRECISION FORMING EQUIPMENT

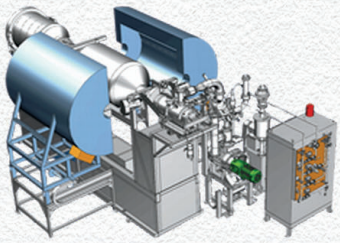


EFFICIENCY ↑ 75%

ENERGY CONSUMPTION ↓ 60%

03

CONTINUOUS HYDROGEN DECREPITATION MACHINE



04

HYDROGEN DECREPITATION MACHINE FOR NdFeB STRIP

05

SEMI-ELECTRIC MAGNETIC FILED FORMING PRESS(DIRECT DISCHARGE)

06

ELECTRIC MAGNETIC FILED FORMING PRESS(SIDE DISCHARGE)

Our products are strictly designed and manufactured in accordance with requirements such as UL and CE standards

Our products can be reasonably customized according to your specific requirements.

Fax:(+86)0574-88749378

Office Address:108XinghaiRoad,Binhai New Area,Fenghua Economic Development Zone,Ningbo City,Zhejiang Province

Website:www.nbbqd.com

TDK

90th 2025 Anniversary

TDK Transformation

Accelerating transformation for a sustainable future

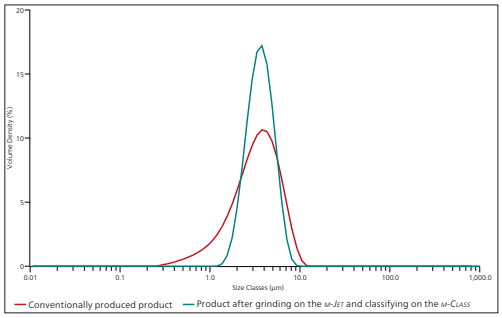
NETZSCH Process Technology

NEW JET MILLING & CLASSIFYING SOLUTION FOR PROCESSING RARE EARTH ALLOYS

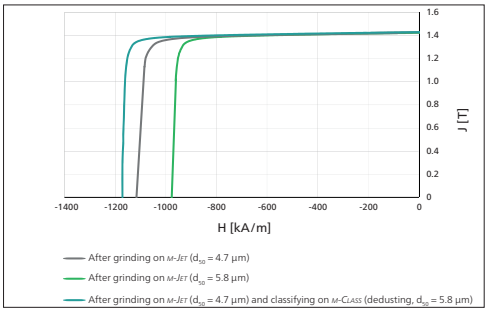
- d_{50} down to 1 µm
- lower d_{90} / d_{10} value
- no product residue after milling
- from laboratory to production scale

In the manufacturing process of rare earth magnets, the material powder is ground before being pressed and sintered. Its grinding is an essential step as the particle size is of significant importance for the quality and properties of the magnets which are subsequently manufactured from the powder. Ideally the particle size distribution should be narrow and contain an extremely low, ultra-fine fraction (< 2 µm) and only a small amount of coarse particles (> 8 µm).

Using jet mills and classifiers made by NETZSCH you can reliably process sensitive NdFeB compounds or other alloys under inert gas conditions and obtain a product with a narrow particle size distribution and a defined upper particle size limit.



Particle size distribution of NdFeB powder after grinding and classifying in comparison to conventionally produced product.



Comparison of demagnetization curves of NdFeB magnets

NETZSCH
Proven Excellence.

NETZSCH
Trockenmahltechnik GmbH
info.ntt@netzsch.com

grinding.netzsch.com

Western Digital

Technology That Fuels Expression

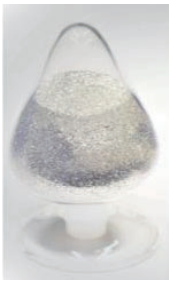
We at Western Digital create the data storage solutions that empower musicians, artists, and aficionados alike to pursue their passions and build a future where the creative possibilities are limitless.

www.westerndigital.com

Isotropic NdFeB/SmFeN bonded magnets

★Production process

Melt spinning (Powder)



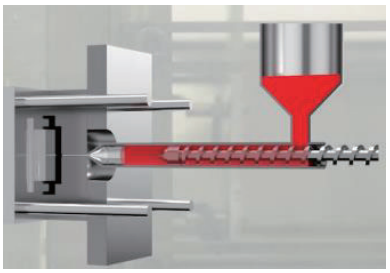
Thermoplastic PA, PPS

Mixture (Compound)

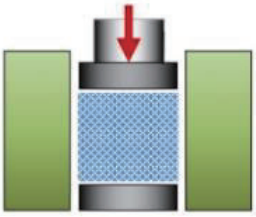
Thermoset Epoxy

Mixture (Compound)

Injection Molding (Magnet)
-Single Molding
-Simultaneous Molding
-Two-parts Molding



Compression Molding (Magnet)



Magnet + Gear

Magnet + Brass

★Characteristics by material

- ✓ **NdFeB** : Wide range of lineup (Magnetic properties, Type of resin)
  Long term experience
- ✓ **SmFeN** : High corrosion resistance, Long-term thermal stability
  Use of surplus rare earth element Samarium

★Characteristics by molding process

- ✓ **Injection molding** : High geometric freedom, Molding with parts
- ✓ **Compression molding** : High productivity

★$(BH)_{max}$ by products (kJ/m^3)

*Under development

Material	Magnetic powder	Compression molded magnets	Injection molded magnets
NdFeB	-	62~94	PPS:24~56, PA:32~72
SmFeN	135~145	93~105	PPS:44~55 (PPS:~63, PA:63~79)*

DAIDO STEEL

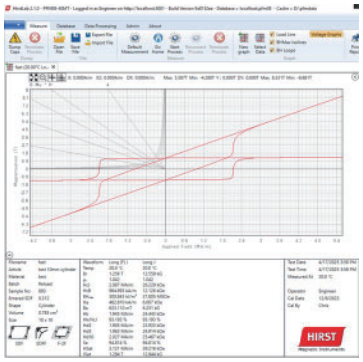
HIRST Magnetic Instruments Ltd.

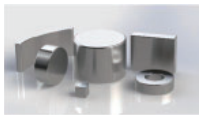
Magnet Characterization - Pulsed Field Magnetometers

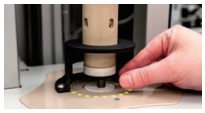
PFM08-10 AT
MH - Manual Handling

PFM08-10 HT, 08-40 HT & 08-70 HT
AH-Automatic sample Handling versions

PFM08-10 & 08-40 MT (-40 °C to +220°C)
AH - Automatic sample Handling versions







Hysteresis measurement of high-performance permanent magnets (NdFeB, SmCo) with the new award-winning generation 8 Pulsed Field Magnetometers (PFM) from Hirst

- Full BH curves, Coercivity (HcJ) measurements up to 4000 kA/m with 10.5T fields
- HcJ repeatability better than ± 0.2% on standard samples
- Any shape samples - sample sizes from 1x1x1mm to 70mm
- Temperature range: -40ºC to 220ºC
- HirstLab v2 – powerful software for analysis and reporting
- Measurement automation

Fast & repeatable measurements up to 60 per hour

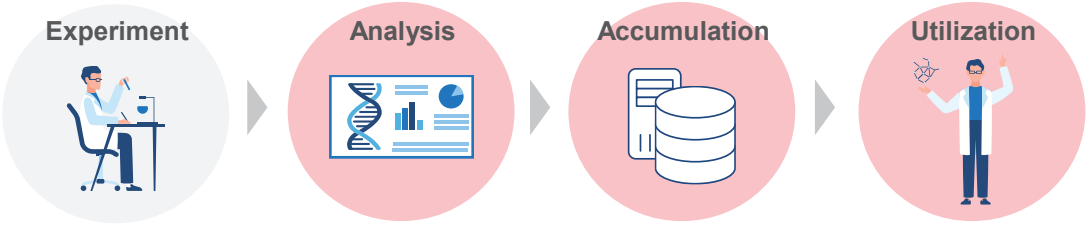
Visit our website or ring one of our technical sales team for more information
T: +44 (0) 1326 362734 sales@hirst-magnetics.com
www.hirst-magnetics.com

Over 25 years of delivering world class Pulsed Field Magnetometers (PFMs)

WAVEBASE

WAVEBASE supporting materials R&D based on materials informatics and data analytics developed in material R&D at TOYOTA

WAVEBASEはトヨタの研究開発部門で得た素材開発やデータサイエンスの知識を活用して、
材料分野を支援する新しいサービスです。



Overcome data shortages and analytical barriers! Accelerate your material development with our cloud analysis platform and elevate your material development to the next stage.

データ不足・分析の壁を突破！
クラウド解析プラットフォームで材料開発をスピードアップしあなたの材料開発を次のステージへ。

TOYOTA

TOYOTA MOTOR CORPORATION

6F, Otemachi Bldg.,
1-6-1, Otemachi, Chiyoda-ku, Tokyo,
100-0004, Japan

MAGFINE

Enabling “Free Rotor Design”

Scan for Datasheet and More Info

AICHI STEEL

Material

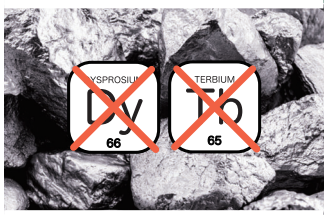
The world’s strongest bonded magnet

Manufacturing process

Omission of manufacturing process

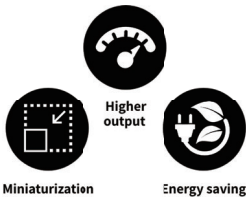
Resource saving

Heavy rare earth metals free



Design capabilities

Rotor Designing with customers



orano

In partnership with cea liten

WHO ARE WE?

As a recognized international operator in the field of nuclear materials, Orano delivers solutions to address present and future global energy and health challenges. Its expertise and mastery of cutting-edge technologies enable Orano to offer its customers high value-added products and services. Every day, Orano draws on their skills, unwavering dedication to safety and constant quest for innovation for the climate and for a healthy and resource-efficient world, now and tomorrow.

Orano is leveraging its differentiating expertise and its unique industrial experience in nuclear fuel recycling to develop magnet recycling, which contributes to a circular economy for strategic metals in Europe.

MAGNOLIA a project to recycle magnets by the “powder” route

bpifrance

MAGELLAN a project to recycle magnets by the ‘melting’ route

Co-funded by the European Union | horizon europe

OBJECTIVES

- Industrialization of advanced processes for manufacturing of the highest performance Nd-Fe-B magnets
- Combination of both recycling of used magnets and stringent specifications of EV Traction Motors & Wind turbines

PROTERIAL

Proterial, Ltd.

Main products: Specialty Steel, Rolls, Automotive Casting, Magnetic Materials, Power Electronics Materials, Electric Wire & Cable, and Automotive Components

Website

Our official LinkedIn account

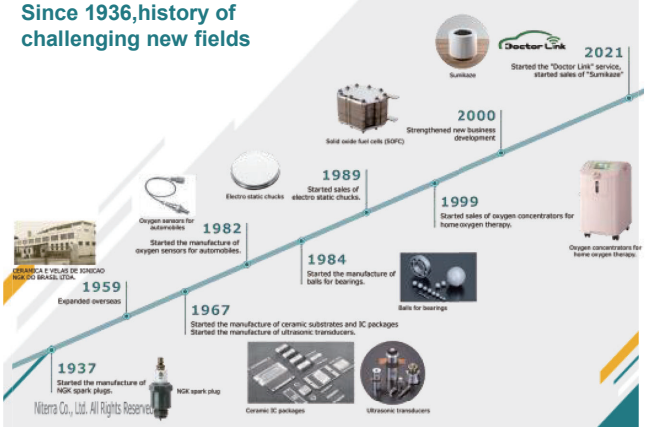
Niterra

Beyond ceramics, eXceeding imagination

Delivering new value in the face of an ever-changing future.
To meet large-scale global environmental changes, we too must change.
Creating an organization comprised of passionate individuals working together to face challenges head-on in order to better society.
We are transcending imagination with technology that transcends boundaries.
We are more than just ceramics and we are going in new directions.

History of our products and technologies

Since 1936,history of challenging new fields



Niterra 日本特殊陶業株式会社

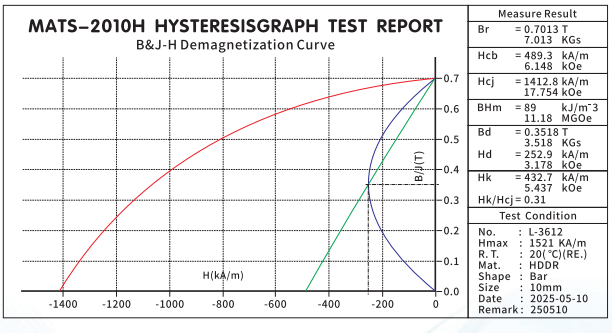
金力永磁
JLMAG

JL MAG Bonded Magnet Co.,Ltd is a company specialized in anisotropic bonded magnet materials with HDDR powder.

HDDR NdFeB Compound(Anisotropic)

Compound Designation	Magnetic powder	Binder	Br Gs	Hcb Oe	Hcj. Oe	(BH)max MGOe	Density g/cc
PA160-140	HDDR	PA12	6000~8000	>5500	>13500	14.0~16.0	5.1~5.3
PPS100-135	HDDR	PPS	6600~6900	>5000	>13500	9.7~10.5	4.3~4.8
PPS120-130	HDDR	PPS	7300~7600	>5000	>15000	12.6~13.5	4.8~5.3
PPS120-150	HDDR	PPS	7200~7500	>6000	>17000	12~12.9	4.8~5.3

Typical Demagnetization Curve of HDDR + PPS



Contact:

Address: No. 8, Qingyunshan Road,Economic Development Zone,Ganzhou City, Jiangxi Province
Phone: +86 0797 8068 545
Email:kenji.noguchi@jlmag.com.cn

MEMO

Design Your Career with NIMS

Career Opportunities in Materials Science for Aspiring PhD students & Postdocs

For Aspiring PhD Students

What is the NIMS Joint Graduate Program?

Enrolled students are supervised by NIMS researchers who are also faculty members at one of seven universities that have a joint agreement with NIMS.

As your main campus is NIMS—from enrollment to graduation, you can put yourself in a front-line research environment at all times!

Since 2004, 670+ students from over 30 countries obtained MS or Ph.D. degrees.

* U. of Tsukuba, Hokkaido U., Yokohama National U., Osaka U. Kyushu U., Waseda U. and Institute of Science Tokyo

What is a NIMS Junior Researcher?

It's what we call outstanding students, with a passion for research, who we select and employ as research staff.

This fellowship—the most generous among its like in Japan, allows you to focus on your research free of financial hardship.

- Annual Stipend
  - Doctoral student: 1.93-2.45 million JPY
  - Master's student: -1.93 million JPY

- NIMS Start-up Support System

NIMS provides newly hired NIMS Junior Researchers with Start-up Support grant in addition to their salary. This grant helps NIMS Junior Researchers to cover part of the initial costs of entering graduate school.

NIMS Internship Program

For undergraduate and graduate students:
Please check our "NIMS Internship Program" in our website.

MAIL: nims-graduate@nims.go.jp

For Postdocs

International Center for Young Scientists

- ✓ Annual Salary : 6 million JPY-
- ✓ Research Budget : 2 million JPY / year
- ✓ Advantage given when applying for NIMS permanent research position
- ✓ Application Period : Twice a year (February-March, August-September)

What opportunities does ICYS offer?

- Pursue your independent research to the fullest!
- Freedom to conduct independent research based on your own idea
- Mentoring by experts inside and outside NIMS
- Full access to cutting-edge equipment

www.nims.go.jp/icys/

Open Science for All!

Conditional APC Waiver program

With the rising cost of article processing charges (APCs) becoming a global issue, ***Science and Technology of Advanced Materials (STAM)***, and its sister journal, ***Science and Technology of Advanced Materials: Methods (STAM Methods)*** launch a new APC waiver campaign supported by NIMS and Empa.
Under certain conditions*, authors will be exempted from the APC, which is normally US$1200 (for STAM) or US$800 (for STAM Methods), and will be able to publish their article open access for free.

*For authors who agree to deposit both their accepted manuscript and associated data in the NIMS institutional repository (**MDR**).

For more information, visit STAM web portal

NIMS 国立研究開発法人物質・材料研究機構 National Institute for Materials Science

Empa

The 28th International Workshop on
Rare Earth and Future Permanent Magnets and Their Applications

SPONSORS

27th-31st July 2025, Tsukuba, Japan

NETZSCH
Proven Excellence.

BROCKHAUS
MEASUREMENTS

EMIC 電子磁気工業株式会社
DENSHIJIKI INDUSTRY CO., LTD.

PROTERIAL

HIRST
Magnetic Instruments

TOYOTA

Niterra
日本特殊陶業

金力永磁
JLMAG

AICHI STEEL
Innovate Materials.
Create Tomorrow.

BQD

日本電磁測器株式会社
NIHON DENJI SOKKI CO.,LTD.

metrolab
大栄無線電機株式会社

TDK

Niron
Magnetics

JOURNAL OF
RARE EARTHS

Western Digital.

orano

DAIDO STEEL

Shin-Etsu