

PROGRAM

Sep. 25/Room A

Symposium "Symposium on research trends in permanent magnet"

Chief Organizer: T. Ohkubo (NIMS)

9:00 ~ 10:30

Chair: K. Ozaki (AIST)

- 25aA-1 Development of fundamental technologies for motors in Technology Research Association of Magnetic Materials for High-Efficiency Motors (MagHEM) (30 min)
°Y. Asano¹, Y. Sanga¹, S. Araki¹, M. Nakagawa¹, A. Yamagiwa¹, S. Morimoto², M. Sanada², Y. Inoue²
(¹Daikin, ²Osaka Pref. Univ.)
- 25aA-2 Development of Nd reduced high coercivity magnet and expectation for future research (30 min)
°T. Shoji (TOYOTA Motor)
- 25aA-3 Powder neutron diffraction study for magnetism of rare-earth in (Nd,Ce,La)₂Fe₁₄B
°T. Hawai¹, M. Yano², T. Shoji², J. Hester³, K. Ono¹ (¹KEK, ²TOYOTA Motor, ³ANSTO)
- 25aA-4 High resolution synchrotron X ray powder diffraction study of lattice constants of Nd₂Fe₁₄B phase in Nd-Fe-B sintered magnets
°S. Kobayashi^{1,2}, A. Martin-Cid^{1,2}, K. Toyoki^{1,2}, H. Okazaki^{1,2}, S. Hirosawa², T. Nakamura^{1,2} (¹JASRI/SPring-8, ²ESICMM)

10:45 ~ 11:45

Chair: M. Matsuura (Tohoku Univ.)

- 25aA-5 Microstructure and coercivity of grain boundary diffusion processed Dy-free and Dy-containing Nd-Fe-B sintered magnets
T. Kim¹, °T. Sasaki¹, T. Ohkubo¹, Y. Takada², A. Kato³, Y. Kaneko², K. Hono¹
(¹NIMS, ²TOYOTA Central R&D Labs., ³TOYOTA Motor)
- 25aA-6 Improved coercivity and squareness in bulk hot-deformed magnets by two-step grain boundary diffusion process
°X. Tang¹, J. Li¹, H. Sepehri-Amin¹, T. Ohkubo¹, K. Hioki², A. Hattori², K. Hono¹ (¹NIMS, ²Daido Steel)
- 25aA-7 Theoretical study on the magnetization reversal of rare-earth magnets at finite temperature (30 min)
°A. Sakuma¹, Y. Toga^{2,3}, T. Miyake^{3,4}, S. Miyashita^{3,5,6} (¹Tohoku Univ., ²NIMS, ³ESICMM, ⁴AIST, ⁵Univ. of Tokyo, ⁶JPS)

14:00 ~ 15:30

Chair: T. Ohkubo (NIMS)

- 25pA-1 Recent progress in studies on crystalline phases and magnetic domain structures in high coercivity permanent magnets using synchrotron X-rays (30 min)
°T. Nakamura (JASRI)
- 25pA-2 Effects of microstructure on magnetization reversal inside hot-deformed permanent magnet
°H. Tsukahara¹, K. Iwano¹, C. Mitsumata², T. Ishikawa¹, K. Ono¹ (¹KEK, ²NIMS)
- 25pA-3 Defect grain influence on the mechanism of coercivity and its angular dependence of exchange-coupled polycrystalline Nd-Fe-B magnet
°J. Li, X. Tang, H. Sepehri-Amin, T. Ohkubo, K. Hono (NIMS)
- 25pA-4 Demagnetizing field correction of rare earth permanent magnets using finite element method
°J. Fujisaki¹, A. Furuya¹, H. Shitara¹, Y. Uehara², K. Kobayashi³, Y. Hayashi⁴, K. Ozaki⁵
(¹Fujitsu, ²Magnetic Device Laboratory, ³SIST, ⁴Toei Industry, ⁵AIST)
- 25pA-5 Easy measurement of anisotropy constants for Nd-Fe-B sintered magnet
°H. Nishio, K. Machida (Osaka Univ.)

15:45 ~ 17:30

Chair: Y. Takahashi (NIMS)

- 25pA-6 Potential of RFe_z (z = 9-12) alloys as permanent magnet materials (30 min)
°S. Sakurada (Toshiba)

- 25pA-7 Site preference of dopant elements in rare-earth permanent magnets
^oM. Matsumoto, T. Hawai, K. Ono (KEK)
- 25pA-8 Magnetic anisotropy constants and magnetic moments of Fe in ThMn₁₂-type Sm(Fe_{1-x}Co_x)₁₂ compounds
^oD. Ogawa¹, T. Yoshioka², S. Li³, T. Ueno³, S. Sakai³, T. Mitsui³, Y. Takahashi¹, H. Tuchiura², S. Hirosawa¹, K. Hono¹
⁽¹⁾NIMS, ²Tohoku Univ., ³QST)
- 25pA-9 Determination of the magnetic moment in (Sm_{1-x}Zr_x)(Fe_{0.8}Co_{0.2})₁₂ by XMCD
^oA. Martin-Cid^{1,2}, S. Kobayashi^{1,2}, K. Toyoki^{1,2}, D. Ogawa², Y. Takahashi², S. Hirosawa², K. Hono², T. Nakamura^{1,2}
⁽¹⁾JASRI/SPring-8, ⁽²⁾ESICMM)
- 25pA-10 Grain size reduction of SmFe₁₂-based powders; toward development of bulk high-performance permanent magnet
^oH. Sepehri-Amin, I. Dirba, T. Ohkubo, K. Hono (ESICMM)
- 25pA-11 Development of Sm-Fe-N bulk magnets showing high maximum energy products
^oR. Matsunami, M. Matsuura, N. Tezuka, S. Sugimoto (Tohoku Univ.)

Sep. 25/Room B

- Magnetic physics Maltiferroic** **9:45 ~ 10:45** Chair: R. Umetsu (Tohoku Univ.)
- 25aB-1 Magnetic properties of a Co₂FeSi/BaTiO₃ interfacial multiferroic heterostructure
^oY. Teramoto¹, S. Yamada^{1,2}, T. Murata¹, D. Matsumi¹, K. Kudo¹, T. Taniyama³, K. Hamaya^{1,2}
⁽¹⁾Grad. Sch. Eng. Sci., Osaka Univ., ⁽²⁾CSRN, Grad. Sch. Eng. Sci., Osaka Univ., ⁽³⁾Dep. Phys., Nagoya Univ.)
- 25aB-2 Electric current response of magnetic characteristics induced in artificial ferromagnets fabricated on a ferroelectric substrate
^oN. Akamatsu^{1,2}, R. Nakamura^{1,2}, S. Saegusa^{1,2}, A. Nakao¹, Y. Utsumi¹, K. Yamada³, M. Oura², T. Ohkochi^{2,4}, T. Lee⁵, K. Kim⁵, T. Ogasawara⁶, A. Yamaguchi^{1,2} ⁽¹⁾Univ. Hyogo, ⁽²⁾RIKEN, ⁽³⁾Gifu Univ., ⁽⁴⁾JASRI, ⁽⁵⁾KAIST, ⁽⁶⁾AIST)
- 25aB-3 Magnetization reversal of metallic magnetic film fabricated onto (Bi,La)(Fe,Co)O₃ multiferroic film by applying electric field to multiferroic / metallic magnetic multilayers
^oS. Yoshimura, N. Oshita, M. Kuppan (Akita Univ.)
- 25aB-4 Magnetoelectric effect of BiFeO₃/Co_{1-x}Cu_xFe₂O₄ multilayer thin films
^oS. Tsuchida, K. Kamishima, K. Kakizaki (Saitama Univ.)

Magnetic physics Domain structure, atomic configuration

- 11:00 ~ 12:00 Chair: M. Otake (Yokohama National Univ.)
- 25aB-5 Magnetic domain structure of Fe-Ga alloy single crystal on vibration power generator
^oS. Fujieda¹, T. Takahashi², R. Simura², T. Kawamata², T. Fukuda³, S. Suzuki²
⁽¹⁾Osaka Univ., ⁽²⁾Tohoku Univ., ⁽³⁾Fukuda Crystal Laboratory)
- 25aB-6 Magnetization reversal process of hot-deformed Nd-Fe-B magnets using soft X-ray magnetic circular dichroism microscopy
^oM. Takeuchi¹, T. Yomogita¹, N. Kikuchi¹, S. Okamoto^{1,2}, O. Kitakami¹, K. Toyoki^{2,3}, S. Kobayashi^{2,3}, Y. Kotani³, T. Nakamura^{2,3}, A. Hattori⁴, K. Hioki⁵ ⁽¹⁾Tohoku Univ., ⁽²⁾ESICMM, ⁽³⁾JASRI/SPring-8, ⁽⁴⁾Daido Electronics, ⁽⁵⁾Daido Steel)
- 25aB-7 Short-range ordering of magnetic refrigerant materials R₅Pd₂ (R = Tb, Ho) by neutron diffraction
^oH. Kitazawa¹, Y. Kawamura², L. Keller³, N. Terada¹, H. Suzuki¹, H. Mimiya¹, A. Doenni¹, S. Lee⁴, N. Metoki⁵, K. Kaneko⁵, N. Igawa⁵ ⁽¹⁾NIMS, ⁽²⁾CROSS, ⁽³⁾PSI, ⁽⁴⁾KAERI, ⁽⁵⁾JAEA)
- 25aB-8 Magnetic properties and atomic configuration of Mn₂CoGa in Mn-based Heusler alloy
^oR. Y. Umetsu¹, K. Saito², K. Ono³, T. Ishigaki⁴, M. Tsujikawa¹, M. Shirai¹ ⁽¹⁾Tohoku Univ., ⁽²⁾PSI, ⁽³⁾KEK, ⁽⁴⁾Ibaraki Univ.)

- Magnetic physics Film properties** **13:00 ~ 14:45** Chair: S. Fujieda (Osaka Univ.)
- 25pB-1 X-ray magnetic linear dichroism in perpendicular magnetized films and estimation of quadrupole moments
^oJ. Okabayashi¹, Y. Iida^{2,3}, Q. Xiang², H. Sukegawa², S. Mitani^{2,3} ⁽¹⁾Univ. of Tokyo, ⁽²⁾NIMS, ⁽³⁾Univ. of Tsukuba)
- 25pB-2 Temperature dependence of the magnetization switching behavior for a TbCo amorphous perpendicular magnetic anisotropy film
^oA. Harako¹, H. Sakurai¹, X. Liu², C. Ma², K. Suzuki¹, K. Hoshi¹, N. Tsuji³, Y. Sakurai³, A. Agui⁴
⁽¹⁾Gumma Univ., ⁽²⁾Shinshu Univ., ⁽³⁾JASRI, ⁽⁴⁾QST)

- 25pB-3 Control of perpendicular magnetic anisotropy of Co thin films formed on a flexible substrate using an in-plane biaxial tensile strain technique
^oH. Matsumoto^{1,2}, S. Ota^{1,2}, T. Koyama^{2,3}, D. Chiba^{2,3} (¹The Univ. of Tokyo, ²ISIR, Osaka Univ., ³CSRN, Osaka Univ.)
- 25pB-4 Characterization of the pressurized structure of piezo-electric magnetic tunnel junctions
^oS. Urashita, R. Kitagawa, H. Onozawa, Y. Stutler, T. Harumoto, J. Shi, Y. Nakamura, Y. Takamura, S. Nakagawa (Tokyo Inst. Tech.)
- 25pB-5 Comparison Between In-plane Damping and Out-of-plane Damping in Fe Binary Alloy Thin Films
^oY. Endo, T. Nguyen, Y. Kawabe, Y. Shimada (Tohoku Univ.)
- 25pB-6 Annealing effect of spin Seebeck voltage and surface structure of Bi:YIG/Pt thermoelectric conversion device made by MOD method
^oY. Takahashi, T. Takase, K. Yamaguchi (Fukushima Univ.)
- 25pB-7 Resonance absorption peak-width on frequency-sweep ferromagnetic resonance
^oT. Kawai¹, S. Takeda², M. Ohtake¹ (¹Yokohama National Univ., ²Magnotech)

- Magnetic physics 2D • Complexes** **15:00 ~ 16:15** Chair: N. Kikuchi (Tohoku Univ.)
- 25pB-8 Recent Development of Itinerant-Electron Magnetism and 2D Itinerant Ferromagnetic System, ACo_2X_2 System
^oK. Yoshimura¹, K. Moriyama¹, K. Nara¹, J. Murakawa¹, M. Imai^{1,2}, H. Ohta^{1,3}, J. Yang^{1,4}, C. Michioka¹, H. Ueda¹, A. Matsuo⁵, K. Kindo⁵, Y. Takahashi⁶
(¹Kyoto Univ., ²JAEA, ³TUAT, ⁴Hangzhou Normal University, ⁵Univ. of Tokyo, ⁶Univ. Hyogo)
- 25pB-9 Thermoelectric Properties of Two-Dimensional Kondo Lattice, $EuSn_2As_2$
^oR. Sakagami¹, H. Karimata¹, Y. Goto², N. Azuma¹, K. Hirata¹, M. Nakanishi¹, S. Iwasaki¹, M. Yamaguchi¹, I. Kitawaki¹, Y. Mizuguchi², M. Matoba¹, Y. Kamihara¹ (¹Keio Univ., ²Tokyo Metropolitan Univ.)
- 25pB-10 Magneto-caloric effect of a bi-layered perovskite ruthenate $Ca_3Ru_2O_7$
^oN. Kikugawa¹, C. Sow², Y. Maeno², N. Tsujii¹, H. Sakurai¹ (¹NIMS, ²Kyoto Univ.)
- 25pB-11 Magnetic properties of porous square metal complexes
^oM. Miyako¹, N. Nomoto¹, T. Fujihara¹, Y. Sawada², T. Kida², M. Hagiwara², N. Kamata¹, Z. Honda¹
(¹Saitama Univ., ²Osaka Univ.)
- 25pB-12 Magnetic anisotropy of one-dimentional metal complexes $M(sba)(H_2O)_2 \bullet H_2O$ ($M=Co,Cu$)
^oN. Nomoto¹, T. Fujihara¹, Y. Sawada², T. Kida², M. Hagiwara², N. Kamata¹, Z. Honda¹ (¹Saitama Univ., ²Osaka Univ.)

Sep. 25/Room C

- Spintronics device** **9:00 ~ 10:30** Chair: T. Seki (Tohoku Univ.)
- 25aC-1 Temperature dependence of STT switching of hybrid memory layer using low Curie temperature CoPd/Pd multilayer
^oW. Zhao¹, T. Kato¹, D. Oshima¹, Y. Sonobe², S. Takahashi², S. Iwata¹ (¹Nagoya Univ., ²Samsung Research Inst. Jpn.)
- 25aC-2 Inducing out-of-plane precession of magnetization for microwave-assisted magnetic recording with an oscillating polarizer in a spin-torque oscillator
^oW. Zhou¹, S. Hosseini¹, T. Taniguchi², S. Tamaru², Y. Sakuraba¹, S. Kasai¹, H. Kubota², K. Hono¹ (¹NIMS, ²AIST)
- 25aC-3 Voltage-driven switching with long tolerance of voltage-pulse duration in a perpendicular MRAM
^oR. Matsumoto¹, T. Sato^{1,2}, H. Imamura¹ (¹AIST, ²Chiba Inst. Tech.)
- 25aC-4 Magnetization switching of a perpendicular magnetic nanodot induced by nonlocal spin injection
^oH. Suto, T. Nagasawa, T. Kanao, K. Yamada, K. Mizushima (Toshiba)
- 25aC-5 Study on current-induced domain-wall motions of antiferromagnetically coupled layered magnetic wires with various nonmagnetic interlayer thickness
^oM. Tanaka¹, T. Ohmasa¹, T. Suzuki¹, S. Honda¹, S. Honda², H. Awano³, K. Mibu¹
(¹Nagoya Inst. Tech., ²Kansai Univ., ³Toyota Tech. Inst.)
- 25aC-6 Spin ice reservoir computing
^oY. Kuwabiraki, H. Nomura, Y. Suzuki, R. Nakatani (Osaka Univ.)

- Spin orbit torque** **10:45 ~ 12:00** Chair: K. Hamaya (Osaka Univ.)
- 25aC-7 Significant modulation of spin-orbit torque by inserting oxidation layer into Co/Pt interface
^oK. Hasegawa¹, T. Koyama^{2,3}, D. Chiba^{2,3} (¹Univ. of Tokyo, ²ISIR, Osaka Univ., ³CSRN, Osaka Univ.)

- 25aC-8 Gd content dependence of spin orbit torques of SiN / GdFeCo / Ta trilayers
K. Kawakami, K. Kadowaki, ^oT. Kato, D. Oshima, S. Iwata (Nagoya Univ.)

25aC-9 Spin-orbit-torque induced magnetization switching for an ultra-thin MnGa grown on NiAl buffer layer
^oF. Shimohashi, B. V. Nguyen, M. Yamanouchi, T. Uemura (Hokkaido Univ.)

25aC-10 Electric-field-assisted spin orbit torque switching in MgO/Co/Pt trilayers
^oK. Kunishima, X. Zhou, D. Oshima, T. Kato, S. Iwata (Nagoya Univ.)

25aC-11 Domain wall propagation by spin-orbit torques in in-plane magnetized systems
^oR. Kohno^{1, 2, 3, 4}, J. Sampaio^{1, 2, 3, 4}, S. Rohart^{1, 2, 3, 4}, A. Thiaville^{1, 2, 3, 4} (¹LPS, ²CNRS, ³Univ. Paris-Sud, ⁴Univ. Paris-Saclay)

Magnetoresistance effect

13:30 ~ 15:30

Chair: T. Koyama (Osaka Univ.)

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| 25pC-1 | Influence of Ge composition in Co ₂ Fe(Ga,Ge) films on magnetoresistance characteristics of Co ₂ Fe(Ga,Ge)-based current-perpendicular-to-plane spin valves
°Y. Chikaso ¹ , T. Tanimoto ¹ , M. Inoue ¹ , K. Inubushi ² , K. Nakada ² , T. Uemura ¹ (¹ Hokkaido Univ., ² TDK) |
| 25pC-2 | Microstructure and spin-dependent electronic transport in CPP-GMR devices with Ag-In:Mn-Zn-O spacer
°T. Nakatani, T. Sasaki, Y. Sakuraba, K. Hono (NIMS) |
| 25pC-3 | A first-principles study on spin anomalous Hall effect of L1 ₀ -type magnetic alloy
°Y. Miura, K. Nawa, K. Masuda (NIMS) |
| 25pC-4 | Spin anomalous Hall effect in L1 ₀ -FePt
°T. Seki ¹ , S. Iihama ¹ , T. Taniguchi ² , K. Takanashi ¹ (¹ Tohoku Univ., ² AIST) |
| 25pC-5 | Fabrication of artificial antiferromagnetic structure with Cu-Ir spin Hall layer
°H. Masuda, T. Seki, T. Kubota, K. Takanashi (Tohoku Univ.) |
| 25pC-6 | Spin Hall magnetoresistance in β - and α -phase WTa alloy/CoFeB stack systems
°Y. Saito, N. Tezuka, S. Ikeda, H. Sato, T. Endoh (Tohoku Univ.) |
| 25pC-7 | Voltage control of magnetic proximity effect at CoFe ₂ O ₄ /Pt interface
°S. Nodo, T. Yamamoto, T. Yanase, T. Shimada, T. Nagahama (Hokkaido Univ.) |
| 25pC-8 | Giant magnetoresistance effect in CIP-GMR device using meta-stable bcc Cu spacer
K. B. Fathoni ^{1,2} , °Y. Sakuraba ¹ , T. Sasaki ¹ , Y. Miura ¹ , T. Nakatani ¹ , K. Hono ^{1,2} (¹ NIMS, ² Univ. of Tsukuba) |

Spin current • heat current • spin conversion

15:45 ~ 17:45

Chair: H. Tanigawa (Sony Semiconductor)

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| 25pC-9 | Correlation between spintronic properties and ferromagnetism of ferromagnet/semiconductor interfaces
°M. Yamada ¹ , Y. Shiratsuchi ² , M. Tsukahara ¹ , H. Kambe ¹ , K. Kudo ^{1,3} , S. Yamada ¹ , K. Sawano ⁴ , R. Nakatani ² , K. Hamaya ^{1,3}
(¹ Grad. Sch. Eng. Sci., Osaka Univ., ² Grad. Sch. Eng., Osaka Univ., ³ CSRN, Osaka Univ., ⁴ Tokyo City Univ.) |
| 25pC-10 | Nonlinear bias dependence of spin accumulation signals in ferromagnet/semiconductor devices
Y. Fujita ¹ , M. Yamada ¹ , M. Tsukahara ¹ , T. Naito ¹ , S. Yamada ^{1,2} , K. Sawano ³ , °K. Hamaya ^{1,2}
(¹ Grad. Sch. Eng. Sci., Osaka Univ., ² CSRN, Osaka Univ., ³ Advanced Research Laboratories, Tokyo City Univ.) |
| 25pC-11 | Quantitative analysis of spin current generated using vorticity in surface acoustic waves
°Y. Kurimune ¹ , M. Matsuo ^{2,3} , S. Maekawa ^{2,3} , Y. Nozaki ^{1,4} (¹ Keio Univ., ² KITS, UCAS, ³ RIKEN, ⁴ Keio Spintronics Center) |
| 25pC-12 | Spin absorption and spin conversion at paramagnetic heavy metal interfaces
°D. Ito ¹ , T. Kimura ^{1,2} (¹ Kyushu Univ. Dept. of Physics, ² RCQNS) |
| 25pC-13 | Mechanism of strong enhancement of anomalous Nernst effect in Fe by Ga substitution
°H. Nakayama ¹ , K. Masuda ¹ , A. Miura ¹ , K. Uchida ¹ , M. Murata ² , Y. Sakuraba ¹ (¹ NIMS, ² AIST) |
| 25pC-14 | Time-dependent measurements of the anomalous Nernst effect using a laser heating
°M. Mizuguchi ^{1,2,3} , M. Saito ^{1,4} , S. Iihama ⁵ , H. Sharma ^{1,2} , M. Kotsugi ⁴ , S. Mizukami ^{3,5,6}
(¹ IMR, Tohoku Univ., ² JST-CREST, ³ CSRN, Tohoku Univ., ⁴ Tokyo Univ. Sci.,
⁵ WPI-AIMR, Tohoku Univ., ⁶ CSIS (CRC), Tohoku Univ.) |
| 25pC-15 | Experimental observation of a conversion of spin and heat currents in nonmagnetic heavy metals
°R. Matsuda ¹ , R. Suko ¹ , D. Ito ¹ , T. Ariki ¹ , T. Kimura ^{1,2} (¹ Kyushu Univ., ² RCQNS) |
| 25pC-16 | Observation of the spin-dependent Peltier effect in lateral spin valve
°R. Suko ¹ , R. Matsuda ¹ , D. Ito ¹ , T. Ariki ¹ , K. Ohnishi ^{1,2} , T. Kimura ^{1,2} (¹ Kyushu Univ., ² RCQNS) |

Sep. 25/Room D

Magnetic sensor		9:00 ~ 10:30	Chair: S. Hashi (Tohoku Univ.)
25aD-1	Examination of Hall element fabrication using GdFe alloy thin film	°A. Mori ¹ , Y. Kasatani ^{1,2} , A. Tsukamoto ¹ (¹ Nihon Univ., ² JSPS)	
25aD-2	Controlling nonlinearity for magnetic tunnel junction based sensors by second order magnetic anisotropy of CoFeB	°T. Ogasawara ¹ , M. Oogane ^{1,2,3} , M. Tsunoda ^{1,3} , Y. Ando ^{1,2,3} (¹ Tohoku Univ., ² CSIS, ³ CSRN)	
25aD-3	Improvement of Sensitivity of a Parallel Fluxgate Sensor by DC-Biased Excitation	°D. Oyama ¹ , Y. Adachi ¹ , M. Miyamoto ¹ , N. Ono ² , A. Imamura ² , D. Watanabe ² (¹ Kanazawa Inst. Tech., ² NEC Network and Sensor Systems)	
25aD-4	Magnetometer Based on Inductance Modulation in Coils Made of High-Tc Superconductor (II)	°S. Yamashita, M. Masaaki, T. Sasayama, T. Yoshida, K. Enpuku (Kyushu Univ.)	
25aD-5	Cutoff frequency of the low-pass filter in detecting traveling magnetic particle by using a gradiometer	°I. Sasada (Kyushu Univ.)	
25aD-6	USB power operated portable FM-OFG magnetometer	°I. Sasada (Kyushu Univ.)	
MI • thin film sensor		10:45 ~ 12:00	Chair: I. Sasada (Sasada Magnetics and sensors Lab.)
25aD-7	Development of multi-channel MI sensor system for bio-magnetic measurement based on FPGA	°Z. Yang, J. Ma, T. Uchiyama (Nagoya Univ.)	
25aD-8	Optimize MI sensor circuit and ADC with FPGA	°K. Shi, T. Uchiyama (Nagoya Univ.)	
25aD-9	Flip-chip bonded high-frequency thin-film magnetic field sensor	°H. Kudo ¹ , H. Uetake ² , H. Onodera ³ , L. T. Ton ¹ , S. Yabukami ¹ , J. Hayasaka ² , K. Arai ² (¹ Tohoku Univ., ² DENJIKEN, ³ Tohoku Gakuin Univ.)	
25aD-10	A proposal of synchronization problem solution in high frequency near magnetic field measurement system	°D. Tatsuoka, R. Ishida, S. Hashi, K. Ishiyama (Tohoku Univ.)	
25aD-11	Permeability Measurements of Thin Film Using a Flexible Microstrip Line-Type Probe Up To 67 GHz	°K. Nozawa ¹ , K. Okita ¹ , L. Tonthat ¹ , S. Yabukami ¹ , Y. Endo ¹ , Y. Shimada ² , S. Saito ¹ , R. Utsumi ² (¹ Tohoku Univ., ² Toei Scientific Industrial)	
Sensor application		14:00 ~ 15:30	Chair: A. Tsukamoto (Nihon Univ.)
25pD-1	Development of flexible heat current sensor using anomalous Nernst effect	W. Zhou, H. Nakayama, °Y. Sakuraba (NIMS)	
25pD-2	Characteristic evaluation of reverse magnetostrictive effect strain sensor by forced vibration	°D. Sora, Y. Kubo, K. Arai, S. Hashi, K. Ishiyama (Tohoku Univ.)	
25pD-3	Vibration-type energy harvester using Wiegand sensor with separated wire/coil and its equivalent circuit analysis	°H. Iijima, X. Sun, K. Hara, T. Sakai, T. Yamada, Y. Takemura (Yokohama National Univ.)	
25pD-4	Wireless power transmission using a Wiegand wire	°S. Kawazoe, S. Waguchi, T. Sakai, T. Yamada, Y. Takemura (Yokohama National Univ.)	
25pD-5	Fundamental study on high S/N ratio optical probe current sensor using sensor head with collimator lens	°K. Yamazaki ¹ , S. Ota ¹ , K. Iwami ¹ , K. Furuya ¹ , T. Kubo ² , M. Miyamoto ² , M. Sonehara ¹ , T. Sato ¹ (¹ Shinshu Univ., ² CITIZEN FINEDEVICE)	
25pD-6	Fundamental study on ring interferometric optical probe current sensor with high temperature stability	°K. Furuya ¹ , K. Iwami ¹ , S. Ota ¹ , K. Yamazaki ¹ , T. Kubo ² , M. Miyamoto ² , M. Sonehara ¹ , T. Sato ¹ (¹ Shinshu Univ., ² CITIZEN FINEDEVICE)	
Magnetization process		15:45 ~ 17:15	Chair: S. Yabukami (Tohoku Univ.)
25pD-7	Evaluation of magnetization process of partially excited Wiegand wire	°T. Sakai, T. Yamada, Y. Takemura (Yokohama National Univ.)	

- 25pD-8 The fine magnetic structure of magnetic multilayer with 90 degrees magnetic coupling layer by using Polarized Neutron Reflectivity analysis
[°]Y. Zhong¹, G. Nagashima¹, S. Horiike¹, T. Hanashima², Y. Kurokawa¹, H. Yuasa¹ (¹Kyushu Univ., ²CROSS)
- 25pD-9 Local magnetization measurement of magnetic recording head by detecting energy cross term of DC and AC magnetic field by alternating magnetic force microscopy
P. Dubey, P. Kumar, [°]H. Saito (Akita Univ.)
- 25pD-10 Dynamic observation of domain wall movement of patterned permalloy thin films by alternating magnetic force microscopy
[°]T. Osaka¹, J. W. Wu², H. Saito¹ (¹Akita Univ., ²NCUE)
- 25pD-11 Three-dimensional magnetic field measurement of permanent magnet by alternating magnetic force microscopy: Conversion of measuring magnetic field direction based on MFM tip transfer function
[°]S. Wada, Y. Zhao, T. Matsumura, H. Saito (Akita Univ.)
- 25pD-12 Evaluation of high frequency magnetic field response for Co-GdO_x superparamagnetic MFM tip by X-band waveguide slot antenna
[°]T. Kamimura¹, H. Sonobe¹, T. Matsumura¹, K. Ito², H. Saito¹
(¹Akita Univ., ²National Institute of Technology, Akita College)

Sep. 25/Room E

- Medical technology** **13:00 ~ 14:15** Chair: T. Honda (Kyushu Inst. Tech.)
- 25pE-1 Development of Peak to Peak Voltage Detector Type MI Gradiometer for Magnetocardiography
[°]J. Ma, T. Uchiyama (Nagoya Univ.)
- 25pE-2 Noise Reduction Method for Low SNR Magnetocardiogram by ICA with Adaptive Filter Preprocessing
[°]K. Miura, M. Iwai, M. Abe, T. Fujioka, K. Kobayashi (Iwate Univ.)
- 25pE-3 Investigation by Simulation of Active Magnetic Shield with DPM Controller
[°]H. Yamazaki¹, M. Iwai¹, M. M. Gupta², F. M. Bui², K. Kobayashi¹ (¹Iwate Univ., ²University of Saskatchewan)
- 25pE-4 Wireless power transmission to implantable medical devices using Wiegand wire
[°]S. Waguchi, S. Kawazoe, T. Sakai, T. Yamada, Y. Takemura (Yokohama National Univ.)
- 25pE-5 Effect of ELE Magnetic Field on membrane potential of human cancer cells
[°]S. Hayashi¹, M. Kakikawa¹, S. Yamada² (¹Kanazawa Univ., ²Komatsu Univ.)
- Medical beads** **14:30 ~ 16:00** Chair: T. Uchiyama (Nagoya Univ.)
- 25pE-6 Application of superconducting magnetic separation for the removal of scales from boiler feed water in thermal power plants
[°]N. Hirota¹, H. Okada¹, F. Mishima², S. Nishijima², Y. Akiyama³, H. Matsuura⁴, S. Namba⁴, T. Sekine⁵
(¹NIMS, ²Fukui Univ. of Tech, ³Osaka Univ., ⁴Shikoku Research Institute Inc, ⁵Ebara Industrial Cleaning Co. Ltd.)
- 25pE-7 Wash Free Detection of Biological Targets Utilizing Cluster Formation of Magnetic Markers
[°]K. Akiyoshi¹, J. Goto¹, T. Yoshida¹, T. Sasayama¹, K. Enpuku¹, M. Hara² (¹Kyushu Univ., ²Tamagawa)
- 25pE-8 Measurement of bacteria using magnetic beads by switching magnetic field.
[°]S. Takahashi¹, L. Tonthat¹, H. Onodera², K. Okita², S. Yabukami^{1,2}, K. Yokota^{1,2}, M. Furuya¹, H. Kanetaka¹, Y. Miura³, H. Takahashi³ (¹Tohoku Univ., ²Tohoku Gakuin Univ., ³JNS)
- 25pE-9 Development of the discrimination method of mobile and immobilized magnetic nanoparticles in MPI
[°]O. Higashi, Y. Noguchi, T. Yoshida, K. Enpuku (Kyushu Univ.)
- 25pE-10 Magnetic nanoparticle tomography using magnetic sensor array
[°]T. Sasayama, T. Yoshida (Kyushu Univ.)
- 25pE-11 Magnetic linear dichroism of iron oxide nanoparticle suspension under alternating magnetic field
[°]M. Suwa, A. Uotani, S. Tsukahara (Osaka Univ.)
- Hyperthermia** **16:15 ~ 17:45** Chair: T. Sasayama (Kyushu Univ.)
- 25pE-12 Heat generation characteristics of bioactive bone cement containing magnetite for hyperthermia of metastatic bone tumor
[°]M. Kubota¹, T. Ogawa¹, S. Saito¹, J. Balachandran², M. Kawashita³
(¹Tohoku Univ., ²Univ. Shiga Pref., ³Tokyo Med. Dent. Univ.)

- 25pE-13 Improvement of accuracy in a high frequency magnetization process measurement and superposition of a static magnetic field
^oR. Onodera¹, T. Kuroiwa², H. Yanagihara², E. Kita¹ (¹Ibaraki Nat. Coll. Tech, ²Univ. of Tsukuba)
- 25pE-14 Specific loss power of magnetically fractionated Ferucarbotran
^oM. Ishikawa¹, S. Takeuchi¹, G. Shi¹, S. Ota², T. Yoshida³, K. Enpuku³, I. Kato⁴, S. Nohara⁴, T. Yamada¹, Y. Takemura¹
(¹Yokohama National Univ., ²Shizuoka Univ., ³Kyushu Univ., ⁴Meito Sangyo)
- 25pE-15 AC magnetization characteristics of oriented ferromagnetic single crystal nanocube in copper matrix
^oS. Kobayashi¹, T. Yamaminami¹, H. Sakakura¹, M. Takeda¹, T. Yamada¹, S. Ota², Y. Takemura¹
(¹Yokohama National Univ., ²Shizuoka Univ.)
- 25pE-16 Evaluation of AC magnetization and heat dissipation of Au coated Fe₂O₃ particles
^oT. Yamaminami¹, S. Kobayashi¹, L. Tonthat², K. Mitobe³, S. Yabukami², T. Yamada¹, S. Ota⁴, Y. Takemura¹
(¹Yokohama National Univ., ²Tohoku Univ., ³Akita Univ., ⁴Shizuoka Univ.)
- 25pE-17 Superposition of Neel and Brownian relaxations of magnetic nanoparticles in applying pulse field
^oS. Ota¹, Y. Takemura² (¹Shizuoka Univ., ²Yokohama National Univ.)

Sep. 25/Poster Room

Poster session 1 (Soft & Hard Magnetic Materials, ThinFilms, Fine Particles, Nanostructures, Powermagnetics, MagneticRecording, Utilization of High MagneticFields, Magnetic Imaging)

Chair: H. Suto (Toshiba)

13:00 ~ 15:00

- 25pPS-1 Magnetic properties and structural analysis of FeSiBNb/Cu films
^oT. Uwabe¹, S. Teramoto¹, R. Mimura¹, Y. Fujiwara¹, M. Jimbo², T. Kobayashi¹ (¹Mie Univ., ²Daido Univ.)
- 25pPS-2 Magnetic properties of amorphous films with a few nm thickness
^oS. Nozue¹, M. Jimbo², Y. Fujiwara¹, T. Kobayashi¹ (¹Mie Univ., ²Daido Univ.)
- 25pPS-3 Preparation and Magnetic Properties of ZnFe₂O₄ by MOD Technique II
^oY. Nakata, T. Ota, N. Adachi (Nagoya Inst. Tech.)
- 25pPS-4 Spontaneous polarization of layered hexagonal compound, EuSn₂As₂
^oK. Hirata, R. Sakagami, M. Matoba, Y. Kamihara (Keio Univ.)
- 25pPS-5 Effect of laser irradiation conditions on preparation of isotropic R(Pr or Nd)-Fe-B/α-Fe nanocomposite film magnets
^oM. Ueno, K. Takashima, A. Yamashita, T. Yanai, M. Nakano, H. Fukunaga (Nagasaki Univ.)
- 25pPS-6 Properties and Characterization of Nd-Fe-B film magnets together with Fe thin films using vacuum arc deposition
^oM. Momosaki, N. Inoue, K. Takashima, A. Yamashita, T. Yanai, M. Nakano, H. Fukunaga (Nagasaki Univ.)
- 25pPS-7 The influence of Al, Cr and Mn additions on magnetic anisotropy of La-Co substituted SrM type ferrite
^oH. Nishida, T. Waki, Y. Tabata, H. Nakamura (Kyoto Univ.)
- 25pPS-8 Possibility as a permanent magnet of hexagonal Laves phase Zr(Fe,Sb)₂
^oT. Miura, T. Waki, Y. Tabata, H. Nakamura (Kyoto Univ.)
- 25pPS-9 Dzyaloshinskii-Moriya interaction and damping-like spin-orbit torque in Co/Gd/Pt ferrimagnetic multilayers
^oT. Nishimura¹, D. Kim^{2,3}, D. Kim¹, Y. Nam², Y. Park^{2,3}, Y. Shiota¹, T. Moriyama¹, B. Min³, S. Choe², T. Ono^{1,4}
(¹ICR, Kyoto Univ., ²SNU, ³KIST, ⁴CSRN)
- 25pPS-10 Dynamic Magnetic Properties of SMC Made of Submicron FeB Particles
^oB. Fang¹, T. Miyazaki¹, H. Aoki², H. Masumoto², Y. Endo¹ (¹Tohoku Univ., ²FRIS, Tohoku Univ.)
- 25pPS-11 Effect of particle size on spin vortex formation for Fe₃O₄ sub-micron particles
^oK. Noguchi¹, M. Chiba¹, S. Kobayashi¹, T. Murakami¹, T. Watari¹, M. Jayappa², S. A. Jerzy³
(¹Iwate Univ., ²Rani Channamma Univ., ³Saskatchewan Univ.)
- 25pPS-12 Preparation and evaluation of Bi-substituted Magnetic Garnet Films by mean of an Excimer-Laser assisted Metal Organic Deposition Process
^oH. Aiba¹, K. Sodeyama¹, M. Nishikawa¹, M. Kawahara², T. Nakajima³, T. Tsuchiya³, T. Ishibashi¹
(¹Nagaoka Univ. Tech., ²Kojundo, ³AIST)
- 25pPS-13 First-principles calculations of Curie temperature change in L1₀-type FePtX (X = Mn, Cu, Ru, Rh)
^oY. Kota (Fukushima Nat. Coll. Tech.)

- 25pPS-14 Spin wave propagation of ferrimagnetic GdCo
°S. Funada, T. Nishimura, Y. Shiota, S. Kasukawa, M. Ishibashi, T. Moriyama, T. Ono (Kyoto Univ.)
- 25pPS-15 Large nonreciprocal frequency shift of propagating spin waves in synthetic antiferromagnets
°M. Ishibashi, Y. Shiota, T. Li, S. Funada, T. Moriyama, T. Ono (Kyoto Univ.)
- 25pPS-16 Spin-wave switching by a double dynamic magnonic crystal
°M. Iwaba, S. Fuziwarra, K. Sekiguchi (Yokohama National Univ.)
- 25pPS-17 Crystal orientation dependence of the spin current transmission in single crystalline NiO thin films
°T. Ikebuchi, T. Moriyama, K. Oda, H. Iwaki, T. Ono (Kyoto Univ.)
- 25pPS-18 Snell's law for isotropically propagating spin wave
°T. Li¹, T. Taniguchi², Y. Shiota¹, T. Moriyama¹, T. Ono^{1,3} (¹Kyoto Univ., ²Tech. Univ. of Munich, ³Osaka Univ.)
- 25pPS-19 Bending Magnetic Levitation Control under Disturbance Conditions (Experimental Consideration Using Sliding Mode Control)
°K. Ogawa, M. Tada, T. Narita, H. Kato (Tokai Univ.)
- 25pPS-20 Thin plate steel magnetic levitation system combining electromagnet and permanent magnet (Effect of steel plate shape on levitation stability)
°Y. Ito, Y. Oda, A. Shiina, T. Narita, H. Kato (Tokai Univ.)
- 25pPS-21 Characteristic Comparison of Bidirectional LLC Resonant DC-DC Converters
°K. Gorai, K. Kitano, Y. Shimizu, R. Suzuki, H. Saotome (Chiba Univ.)
- 25pPS-22 Investigation of dual-layer selective recording using microwave assisted magnetic recording
°W. Saito, S. J. Greaves (Tohoku Univ.)
- 25pPS-23 Stability of the Antiferromagnetic Skyrmion
°K. Hamada, Y. Nakatani (UEC)
- 25pPS-24 Electrical Detection of Alternating Excitation of All-Optical Magnetization Switching in GdFeCo ferrimagnetic alloy by Anomalous Hall Effect
°Y. Kasatani^{1,2}, H. Yoshikawa¹, A. Tsukamoto¹ (¹Nihon Univ., ²JSPS)
- 25pPS-25 Proposal of full granular stacked perpendicular magnetic recording media: Cap layer with high K_u CoPt grains and ferromagnetic oxide grain boundaries materials
°K. Tham¹, R. Kushibiki¹, T. Kamada¹, S. Saito² (¹TANAKA, ²Tohoku Univ.)
- 25pPS-26 Study in adsorption of NIPAm on Montmollironite using magneto birefringence measurements and quantitative NMR measurement
°M. Yamato, K. Komine, T. Miyazaki, H. Kawakami (Tokyo Metropolitan Univ.)
- 25pPS-27 High throughput synthesis and analysis of magnetic dot array by PEEM
°K. Kimura¹, T. Nishio¹, N. Oki¹, M. Yamamoto¹, T. Kadono¹, T. Ohkochi², M. Kotsugi¹ (¹Tokyo Univ. Sci., ²JASRI)

Sep. 26/Room A

Symposium "Fundamental theory and application of magnetics of motor drive system for electrical vehicle"

Chief Organizer: T. Yanai (Nagasaki Univ.)

9:00 ~ 10:30

Chair: K. Fujisaki (Toyota Tech. Inst.)

- 26aA-1 Requirement of magnetic material for high frequency and high power excited by power electronics (30 min)
°K. Fujisaki (Toyota Tech. Inst.)
- 26aA-2 Possible Design and Development of Ultra-high Strength Permanent Magnet Based on Fundamental Conceptual Change in Magnetism (60 min)
°Y. Kawazoe (Tohoku Univ.)

10:45 ~ 11:45

Chair: K. Fujisaki (Toyota Tech. Inst.)

- 26aA-3 Vector Magnetic Hysteresis Characteristics of Electrical Steel Sheet and its Application (60 min)
°M. Enokizono (Vector Magnetic Characteristic Technical Laboratory)

13:00 ~ 14:30

Chair: Y. Asano (DAIKIN)

- 26pA-1 Measurement of magnetic characteristics of traction motors at driving (30 min)
°H. Nakai (TOYOTA Central R&D Labs.)
- 26pA-2 Requirements for magnetic material used in products for electrified automobiles (30 min)
°T. Aoki, S. Doi, K. Okazaki, T. Senoo (DENSO)
- 26pA-3 Research of the Motor characteristics with Nanocrystalline Soft Magnetic Alloy Stator Cores (30 min)
°Y. Yamada, S. Makino, T. Nonaka (YASKAWA Electric)

Sep. 26/Room B

- Symposium "Evolutions of Spintronics Opened up by Topology"** Chief Organizer: S. Nakamura (Toshiba Memory)

9:00 ~ 11:15

Chair: K. Takanashi (Tohoku Univ.)

- 26aB-1 Emergent Phenomena and Functionality in Topological Magnets (45 min)
°N. Kanazawa (Univ. of Tokyo)
- 26aB-2 Quantized surface transport in topological semimetal films (30 min)
°M. Uchida (Univ. of Tokyo)
- 26aB-3 Giant spin-orbit torque generated by BiSb topological insulator (30 min)
°N. Pham^{1,2,3}, H. Nguyen¹, T. Shirokura¹, K. Yao¹ (¹Tokyo Inst. Tech., ²Univ. of Tokyo, ³JST-CREST)
- 26aB-4 Photocurrent in topological materials (30 min)
°N. Ogawa^{1,2}, R. Yoshimi¹, Y. Kaneko¹, M. Mogi³, A. Tsukazaki⁴, M. Kawasaki^{1,3}, Y. Tokura^{1,3}
(¹RIKEN, ²JST-PREST, ³Univ. of Tokyo, ⁴Tohoku Univ.)

13:00 ~ 14:30

Chair: T. Ono (Kyoto Univ.)

- 26pB-1 Topological Spintronics using Weyl Antiferromagnets (30 min)
°S. Nakatsuji (Univ. of Tokyo, Johns Hopkins Univ., JST-CREST)
- 26pB-2 Non equilibrium skyrmion dynamics under the direct current (30 min)
°S. Kasai (NIMS, JST-PREST)
- 26pB-3 Energy saving AI using (artificial) topological materials (30 min)
°Y. Suzuki (Osaka Univ., AIST, NIMS, Osaka Univ. CSRN)

Sep. 26/Room C

- Symposium "Recent progress of non-destructive measurement and imaging by highly sensitive magnetic field detection techniques"** Chief Organizer: Y. Ando (Tohoku Univ.)

9:00 ~ 10:45

Chair: K. Ikushima (TUAT)

- Overview
°Z. Jin (Tohoku Univ.)
- 26aC-1 Highly sensitive magnetic nondestructive testing using magnetoresistive sensor for diagnosis of steel structures (30 min)
°K. Tsukada (Okayama Univ.)
- 26aC-2 Development of a new nondestructive inspection method for concrete bridges (30 min)
°K. Maruyama (Konica Minolta)
- 26aC-3 Failure analysis with magnetic field microscopy (30 min)
°Y. Terui, K. Suzuki, M. Tsutsumi, N. Nishikawa, T. Nagatsuka (Toshiba Nanoanalysis)

11:00 ~ 12:30

Chair: S. Yamada (Komatsu Univ.)

- 26aC-4 Monitoring of structures and material characterization of steel using electromagnetic nondestructive evaluation method (30 min)
°H. Kikuchi (Iwate Univ.)
- 26aC-5 Non-destructive inspection using acoustically stimulated electromagnetic method (30 min)
°Y. Suzuki¹, H. Yamada², K. Ikushima² (¹IHI Inspection & Instrumentation, ²TUAT)

26aC-6 Low invasive high-frequency field measurement system using magneto-optical effect (30 min)
°K. Ishiyama (Tohoku Univ.)

Sep. 26/Room D

- Heusler • ordered alloy** **9:00 ~ 10:45** Chair: K. Mibu (Nagoya Inst. Tech.)
- 26aD-1 First principles calculations for magnetic multilayers based on half-metallic Heusler alloys
°K. Fukugasako, S. Honda, H. Itoh (Kansai Univ.)
- 26aD-2 Difference in crystal growth morphology between Co₂FeSi and Co₂MnSi films on oxide substrates
°K. Kudo¹, Y. Hamazaki², S. Yamada¹, S. Abo¹, Y. Gohda², K. Hamaya¹
(¹Graduate School of Engineering Science, Osaka Univ.,
²Department of Materials Science and Engineering, Tokyo Inst. of Tech.)
- 26aD-3 Origin of positive linear magnetoresistance effect in a Heusler alloy CoFeVSi
°S. Yamada¹, S. Kobayashi¹, A. Masago¹, R. L. Kumara², H. Tajiri², T. Fukushima^{1,3}, S. Abo¹, Y. Sakuraba⁴, K. Hono⁴,
T. Oguchi^{1,4,5}, K. Hamaya¹ (¹Grad. Sch. Eng. Sci., Osaka Univ., ²JASRI, ³IDS, Osaka Univ., ⁴NIMS, ⁵ISIR, Osaka Univ.)
- 26aD-4 Structural-order dependence of anomalous Hall effect in Co₂MnGa full-Heusler alloy thin films
°Q. Wang¹, Z. Wen², T. Kubota¹, T. Seki¹, K. Takanashi¹ (¹Tohoku Univ., ²NIMS)
- 26aD-5 Structural insight using anomalous XRD into Mn₂CoAl inverse Heusler alloy films fabricated by magnetron sputtering,
IBAS and MBE techniques
°L. Kumara¹, H. Tajiri¹, J. Wang², Z. Chen², W. Zhou², Y. Sakuraba², K. Ueda³, S. Yamada⁴, K. Hamaya⁴, K. Hono²
(¹JASRI, ²NIMS, ³Nagoya Univ., ⁴Osaka Univ.)
- 26aD-6 Exchange bias effects on Co-doped Mn₃Ga antiferromagnetic Heusler alloy
°Y. Yoshihara^{1,2}, K. Elphick², H. Uchida¹, M. Inoue¹, A. Hirohata² (¹Toyohashi Univ. Tech., ²Univ. of York)
- 26aD-7 Magnetic Properties of poly-crystalline Cu₂Sb-type MnAlGe films with a (001)-texture
°T. Kubota¹, Y. Kota², K. Ito¹, R. Y. Umetsu¹, M. Sun¹, M. Mizuguchi^{1,3}, K. Takanashi¹
(¹Tohoku Univ., ²Fukushima Nat. Coll. Tech., ³JST-CREST)

Sep. 26/Room E

- Soft magnetic materials** **9:00 ~ 11:00** Chair: Y. Endo (Tohoku Univ.)
- 26aE-1 Soft Magnetic and Structural Properties of (Fe₇₅Co₂₅)₇₅(Al₅₀Si₅₀)₂₅ Alloy Thin Films
°T. Nakano^{1,2}, B. Nepal², Y. Tanaka¹, S. Wu², K. Abe^{1,2}, G. Mankey², T. Mewes², C. Mewes², T. Suzuki²
(¹TDK, ²Univ. of Alabama)
- 26aE-2 Magnetostrictive Property of FeCo(001) Single-Crystal Film Formed on VN Underlayer
°M. Ohtake¹, K. Serizawa^{1,2}, T. Kawai¹, M. Futamoto², F. Kirino³, N. Inaba⁴
(¹Yokohama National Univ., ²Chuo Univ., ³Tokyo Univ. of Arts, ⁴Yamagata Univ.)
- 26aE-3 Magnetic properties and crystal structure of Cu_xCo_{1-x}Fe₂O₄
°M. Hisamatsu, S. Fujieda, S. Seino, T. Nakagawa, T. Yamamoto (Osaka Univ.)
- 26aE-4 A study of coercivity of Co-Ni spinel ferrites at successive stages of synthesis
°S. Uddin, E. Kita, M. Kishimoto, H. Yanagihara (Univ. of Tsukuba)
- 26aE-5 Preparation of hexagonal M-type ferrite ceramics/thin films aiming for microwave absorption
°C. Takahashi, A. Kawamura, D. Koyama, Y. Yasukawa (Chiba Inst. Tech.)
- 26aE-6 Observation of magnetic thin film excited by RF using laser probe
°Y. Saito, S. Hashi, K. Ishiyama (Tohoku Univ.)
- 26aE-7 Study on energy harvesting with (100) [001] silicon steel sheet
°F. Osanai¹, S. Hashi¹, S. Fujieda², K. Ishiyama¹ (¹Tohoku Univ., ²Osaka Univ.)
- 26aE-8 Development of high Bs type Fe-Nb-B-P nanocrystalline alloy with low core loss for power supply
°I. Nakahata, A. Hasegawa, H. Kumaoka, S. Mori, K. Horino, H. Matsumoto (TDK)

Sep. 26/Clock Tower Centennial Hall

- Fellow lecture** **13:00 ~ 14:30**
- Recording Mechanism for Granular Perpendicular Magnetic Recording Medium
°H. Muraoka (Tohoku Univ.)

From ferromagnetic tunnel magnetoresistance to biomagnetic sensor

°Y. Ando (Tohoku Univ.)

Improvement of Magnetic Properties of Permanent Magnets

°S. Sugimoto (Tohoku Univ.)

Sep. 26/Poster Room

Poster session 2 (Physics on Magnetism, Spinelectronics, Medical, Bio- and Environmental Magnetics, Measurement and High Frequency Devices)

Chair: A. Chikamatsu (Univ. of Tokyo)

10:00 ~ 12:00

- 26aPS-1 Feature Quantity Extraction from magnetic domains of Neodymium magnet by Topological Data Analysis
°Y. Terashima¹, T. Yamada^{1,2}, I. Obayashi^{3,4,5}, K. Akagi^{2,4}, Y. Hiraoka^{2,3,5}, M. Kotsugi^{1,2}
(¹Tokyo Univ. Sci., ²MI2I-NIMS, ³Kyoto Univ., ⁴AIMR Tohoku Univ., ⁵AIP center RIKEN)
- 26aPS-2 Effect of the interfacial Dzyaloshinskii-Moriya interaction on magnetic moments near ferromagnetic metal edges
°Y. Kaiya¹, S. Honda¹, H. Itoh¹, T. Ohsawa² (¹Kansai Univ., ²Numazu Coll.)
- 26aPS-3 Voltage control of ferromagnetic resonance in FeRh/PMN-PT multiferroic heterostructures
°M. Zheng, T. Usami, T. Taniyama (Nagoya Univ.)
- 26aPS-4 Fabrication of granular thin films for nondestructive testing magneto-optical sensor
°K. Nishimoto¹, A. Kitahara¹, R. Hashimoto², T. Goto¹, Y. Nakamura¹, P. Lim¹, H. Uchida¹, M. Inoue¹
(¹Toyohashi Univ. Tech., ²Suzuka Nat. Coll. Tech.)
- 26aPS-5 Design of film structures of Ag/Fe_{100-x}-Gd_x/Ag tri-layer for magneto-plasmonic effects
°T. Udagawa, Y. Ashizawa, K. Nakagawa (Nihon Univ.)
- 26aPS-6 Micromagnetics Simulation for the Soft Magnetic Triple Layered Thin Film
°N. Saka, Y. Tsuchida, M. Tsuruoka (Tokyo Univ. of Technology)
- 26aPS-7 Micromagnetic calculation of magnetization reversal mechanism for hollow Fe₃O₄ particle
°N. Hirano, S. Kobayashi, M. Chiba (Iwate Univ.)
- 26aPS-8 Coexistence of antiferromagnetism and molecular clusters in a layered compound CrSe₂ with anomalous valent Cr⁴⁺
°S. Kobayashi¹, N. Katayama², H. Sawa², C. Michioka³, H. Ueda³, K. Yoshimura³
(¹JASRI/SPring-8, ²Nagoya Univ., ³Kyoto Univ.)
- 26aPS-9 Spontaneous magnetization in iron-based superconductor Sr₂VFeAsO_{3-δ} ($\delta = 0.150$)
°S. Iwasaki¹, S. Adachi², Y. Takano², M. Yamaguchi¹, K. Kihou³, C. Lee³, Y. Kamihara^{1,4}
(¹Keio Univ., ²NIMS, ³AIST, ⁴CSRN, Keio Univ.)
- 26aPS-10 Magnetoresistance in an α -RuCl₃/Pt
°Y. Hirata¹, H. Tanaka², N. Kurita², T. Moriyama¹, T. Ono^{1,3} (¹Kyoto Univ., ²Tokyo Inst. Tech., ³Osaka Univ.)
- 26aPS-11 Inverse tunnel magnetoresistance in Fe₃O₄(001)/MgO(001)/Fe(001) magnetic tunnel junctions
°S. Yasui¹, J. Okabayashi², T. Yanase¹, T. Shimada¹, T. Nagahama¹ (¹Hokkaido Univ., ²Univ. of Tokyo)
- 26aPS-12 Spin pumping in all-oxide epitaxial interfaces
M. Terabayashi¹, S. Seki^{2,3}, R. Takagi^{2,3}, M. Nakamura², M. Kawasaki^{2,3}, K. Ishibashi², T. Saitoh¹, °J. Matsuno^{2,4,5}
(¹Tokyo Univ. Sci., ²RIKEN, ³Univ. of Tokyo, ⁴Osaka Univ., ⁵JST-PREST)
- 26aPS-13 Tunneling magnetoresistance in fully epitaxial magnetic tunnel junction with SrO tunnel barrier
°S. Kon^{1,2}, A. Spiesser¹, Y. Yasukawa², S. Yuasa¹, H. Saito¹ (¹AIST, ²Chiba Inst. Tech.)
- 26aPS-14 High-quality MgAl₂O₄-based magnetic tunnel junctions prepared by reactive sputtering method
°S. Ichikawa¹, K. Nakada¹, X. Xu², H. Sukegawa², T. Ohkubo², K. Hono², S. Mitani² (¹TDK, ²NIMS)
- 26aPS-15 Magnetic and thermal conduction properties in Pt on YIG
°R. Kawabe¹, D. Ito¹, K. Miyazaki¹, M. Yafuso¹, T. Kimura¹, C. Po-Chun², R. M. Venkata², H. Chuan-Che², L. Wen-Chin²
(¹Kyushu Univ., ²National Taiwan Normal University)
- 26aPS-16 Growth of noncollinear antiferromagnetic insulator SmFeO₃ films and Spin-Hall magnetoresistance effect
°J. Hatta, N. Tanahashi, K. Matsuura, T. Hajiri, H. Asano (Nagoya Univ.)
- 26aPS-17 Magneto Transport Properties in Antiferromagnetic L1₂-ordered Mn₃Ir Thin Films
°H. Iwaki, T. Moriyama, T. Ikebuchi, K. Oda, Y. Shiota, T. Ono (Kyoto Univ.)

- 26aPS-18 Study on the Barnett Effect in Ferromagnetic Thin Films Using Surface Acoustic Waves
^oA. Yamamoto¹, M. Matsuo^{2,3}, S. Maekawa^{2,3}, Y. Nozaki^{1,4} (¹Keio Univ., ²KITS, UCAS, ³RIKEN, ⁴Keio Spintronics Center)
- 26aPS-19 Perpendicular magnetization and crystal structure of Mn_{2-δ}CoGa_{1+δ} films
^oD. Takano, T. Kubota, K. Takanashi (Tohoku Univ.)
- 26aPS-20 Fabrication of L2₁-ordered Co₂TiSi Heusler Alloy Epitaxial Films
^oM. Liu¹, M. Oogane^{1,2,3}, M. Tsunoda^{1,3}, Y. Ando^{1,2,3} (¹Tohoku Univ., ²CSIS, ³CSRN)
- 26aPS-21 Fabrication of magnetic nanowire device with writer for future high-speed memory application
^oY. Hori, M. Endo, N. Ishii, Y. Miyamoto (NHK)
- 26aPS-22 Temperature dependence of spin Hall magnetoresistance and current induced spin orbit torque effective fields in iron-nitride heterostructures with negative spin polarization
^oS. Isogami (NIMS)
- 26aPS-23 Temperature dependence of magnetic resonance in ferrimagnetic GdFeCo alloys
^oT. Okuno¹, S. Kim², T. Moriyama¹, D. Kim¹, H. Mizuno^{1,3}, T. Ikebuchi¹, Y. Hirata¹, H. Yoshikawa⁴, A. Tsukamoto⁴, K. Kim⁵, Y. Shiota¹, K. Lee⁶, T. Ono^{1,7}
(¹Kyoto Univ., ²Univ. of Missouri, ³Univ. of Tokyo, ⁴Nihon Univ., ⁵KAIST, ⁶Korea Univ., ⁷CSRN)
- 26aPS-24 Fabrication of LaBi thin films and their magneto-transport properties toward topological device application
^oK. Suzuki, K. Ueda, Y. Hadate, H. Asano (Nagoya Univ.)
- 26aPS-25 Time-domain detection of multiple spin-waves solitons generation
^oM. Kawase, M. Iwaba, K. Sekiguchi (Yokohama National Univ.)
- 26aPS-26 Elucidation of correlation between spin Seebeck voltage and Gilbert damping constant in polycrystalline garnet thin films
^oS. Masaki¹, M. Yamamoto¹, M. Ito¹, K. Yamada¹, Y. Kurokawa², Y. Shiota³, T. Moriyama³, T. Ono³, H. Yuasa², M. Shima¹
(¹Gifu Univ., ²Kyushu Univ., ³Kyoto Univ.)
- 26aPS-27 Performance improvement of magnetically driven cytology brush in capsule-type medical device
^oT. Okoba, T. Honda, Y. Yamasaki (Kyushu Inst. Tech.)
- 26aPS-28 Proposal of magnetic guidance methods for capsule-type medical device aiming at stomach inspection
^oK. Okada, T. Honda (Kyushu Inst. Tech.)
- 26aPS-29 Performance evaluation of square coils for magnetic hyperthermia
^oK. Sugi, S. Fujieda, S. Seino, T. Nakagawa, T. A. Yamamoto (Osaka Univ.)
- 26aPS-30 Evaluation of MI element using amorphous wire and development of high sensitivity magnetic sensor
^oX. Zhang, T. Uchiyama (Nagoya Univ.)
- 26aPS-31 Coreless Current Sensor Enabling DC and High Frequency Measurement
^oN. Noguchi, K. Ogawa, M. Terao, S. Kobako, K. Takenaka (Yokogawa)
- 26aPS-32 Development of Broadband Thin Film Common-Mode Filter with Quasi Left-handed Transmission Line
^oT. Terasawa¹, T. Aruga¹, T. Koyama¹, H. Nakayama¹, H. Tanaka¹, S. Adachi², M. Sonehara², T. Sato²
(¹Nat. Ins. Tech. Nagano Coll., ²Shinshu Univ.)
- 26aPS-33 Development of high frequency magnetic field coil for magnetism measurements
^oK. Yoshida, T. Isobe, H. Yanagihara (Univ. of Tsukuba)
- 26aPS-34 Permeability influence on permittivity measurement using open-circuited coaxial line
^oS. Takeda¹, ^oT. Yamaguchi², T. Hotchi², S. Motomura², H. Suzuki² (¹Magnontech, ²KEYCOM)
- 26aPS-35 Theoretical Study on Loss Reduction of Multi-layer Transmission Line with Positive/Negative Permeability Materials
^oY. Aizawa, K. Kubomura, R. Nakamura, H. Nakayama, H. Tanaka (Nat. Ins. Tech. Nagano Coll.)
- 26aPS-36 Generation of 2D vector magnetic field by mangle type magnetic field source using permanent magnets
^oH. Sakuma (Utsunomiya Univ.)

Sep. 27/Room A

Symposium "New measurement approaches to magnetics"

Chief Organizer: N. Kikuchi (Tohoku Univ.)

9:00 ~ 10:00

Chair: M. Hosomi (Sony)

- 27aA-1 Ultra-broadband and ultra-high sensitivity permeability measurements by transformer coupled permeameter (TC-permeameter) (30 min)

^oS. Tamaru (AIST)

- 27aA-2 Measurement of biomagnetic information using room temperature operation tunnel magneto-resistance sensor (30 min)
[°]K. Fujiwara¹, M. Oogane^{2,3,4}, S. Cakir¹, S. Kumagai¹, Y. Ando^{1,2,3,4}
⁽¹⁾Spin Sensing Factory Corp., ⁽²⁾Tohoku Univ., ⁽³⁾CSIS Tohoku Univ., ⁽⁴⁾CSRN Tohoku Univ.)

10:15 ~ 11:45 Chair: A. Tsukamoto (Nihon Univ.)

- 27aA-3 Development of synchrotron X-ray nano-beam dynamic force microscope (30 min)
[°]H. Nomura¹, R. Wakasa¹, N. Samura¹, Y. Jibiki¹, K. Takahashi¹, S. Miki¹, J. Yamaguchi¹, R. Nakatani¹, M. Goto¹, Y. Suzuki¹, K. Toyoki¹, S. Okamoto², Y. Kotani³, T. Nakamura³ (¹Osaka Univ., ²Tohoku Univ., ³JASRI/SPring-8)
- 27aA-4 Femtosecond soft x ray sources via high-order harmonics for ultrafast MCD measurements (30 min)
[°]E. J. Takahashi (RIKEN)
- 27aA-5 Excitation and Propagation Dynamics of Spin Waves Observed by Spin-wave Tomography (30 min)
[°]Y. Hashimoto (Tohoku Univ.)

Power magnetics Motor • converter **13:00 ~ 14:00** Chair: S. Ikeda (Komatsu Univ.)

- 27pA-1 Improvement of Calculation Accuracy of Axial-Flux-type SR Motor
[°]A. Hiroki, K. Nakamura (Tohoku Univ.)
- 27pA-2 Prototype Test of High-Speed Inset PM Motor
[°]Y. Uchiyama¹, K. Nakamura¹, O. Ichinokura¹, H. Goto², H. Guo³
⁽¹⁾Tohoku Univ., ⁽²⁾Utsunomiya Univ., ⁽³⁾Tohoku Gakuin Univ.)
- 27pA-3 High-Speed SR Motor made of Soft Magnetic Composite for Electric Power Tools
[°]A. Nagai, K. Nakamura, S. Sato, A. Makino (Tohoku Univ.)
- 27pA-4 Influence of Current Phase Angle on Stall torque of a Magnetic-Geared Motor
[°]K. Ito, K. Nakamura (Tohoku Univ.)

14:00 ~ 15:00 Chair: O. Ichinokura (Tohoku Univ.)

- 27pA-5 Efficiency Improvement of Outer Rotor type High-Speed Permanent Magnet Motor
[°]S. Sakurai, K. Nakamura (Tohoku Univ.)
- 27pA-6 Characteristics of Interior Permanent Magnet Magnetic Gear made of Amorphous Alloy
[°]Y. Mizuana¹, K. Nakamura¹, Y. Suzuki², Y. Oishi², Y. Tachiya², K. Kuritani² (¹Tohoku Univ., ²Prospine Co., Ltd.)
- 27pA-7 Characteristics of DC-DC Converter having High-Frequency Amorphous Transformer with Interleaved-Winding for HVDC Transmission System
[°]S. Otsu, K. Nakamura (Tohoku Univ.)
- 27pA-8 Influence of Magnetic Saturation on Noise and Efficiency of DC-DC Converter with Frequency Spreading
[°]K. Nishijima¹, S. Amaike² (¹Toyama Nat. Coll. Tech., ²Nissan Engineering)

Power magnetics Inductor • analysis **15:15 ~ 16:15** Chair: K. Nakamura (Tohoku Univ.)

- 27pA-9 Examination of Hybrid Inductor with Large Inductance in Wide Band
K. Shimura¹, [°]K. Torishima¹, M. Sato¹, T. Mizuno¹, T. Matsuoka² (¹Shinshu Univ., ²Nippon Chemi-Con)
- 27pA-10 Development of double five-leg three-phase integrated type variable inductor and application to 6.6kV Voltage Control Integration System
[°]T. Ohinata¹, K. Arimatsu¹, M. Yamada², T. Kojima², O. Ichinokura³ (¹Tohoku Electric Power, ²Fuji Electric, ³Tohoku Univ.)
- 27pA-11 Strong magnetic field array by using cubic permanet magnets
[°]K. Nishimura (Nat. Inst. Tech., Suzuka Coll.)
- 27pA-12 Study on Asymmetric Magnetic Pole Structure IPM Motor Using Neodymium Bonded Magnet
[°]T. Yanagisawa, Y. Yoshida, K. Tajima (Akita Univ.)

16:15 ~ 17:15 Chair: K. Nishimura (Suzuka Nat. Coll. Tech.)

- 27pA-13 Basic investigation of LLC-LC resonant DC-DC converter using a leakage transformer
[°]T. Denda, K. Sato, T. Sako, T. Minamisawa, T. Sato, M. Sonehara (Shinshu Univ.)
- 27pA-14 Magnetic Circuit Model for High-Efficiency Core Magnetized in High-Frequency Range
[°]T. Hatakeyama¹, K. Nakamura² (¹Hitachi, ²Tohoku Univ.)

- 27pA-15 Improvement of Prediction Accuracy of Magnetic Properties in Magnetic Core due to Machining Process by using LLG Equation
^oY. Hane¹, K. Nakamura¹, T. Kawase², N. Hosokawa², N. Kurimoto² (¹Tohoku Univ., ²DENSO)
- 27pA-16 Analysis of electromotive force of environmental magnetic field power generation
^oS. Yamada¹, S. Ikeda¹, K. Tashiro² (¹Komatsu Univ., ²Shinshu Univ.)

Sep. 27/Room B

Symposium "Innovative trials for New Spin Computing"		Chief Organizer: H. Awano (Toyota Tech. Inst.)
	9:00 ~ 10:30	Chair: H. Uchida (Toyohashi Univ. Tech.)
27aB-1	Physical reservoir computing based on spin torque oscillator (30 min) ^o S. Tsunegi ¹ , T. Taniguchi ¹ , K. Nakajima ² , S. Miwa ² , K. Yakushiji ¹ , A. Fukushima ¹ , S. Yuasa ¹ , H. Kubota ¹ ⁽¹ AIST, ² Univ. of Tokyo)	
27aB-2	Artificial Neural Networks with Spintronics (30 min) ^o S. Fukami, W. A. Borders, A. Kurenkov, H. Ohno (Tohoku Univ.)	
27aB-3	Brownian computing using skyrmions and reservoir computing in magnetic dot-arrays (30 min) ^o M. Goto ^{1,3} , T. Nozaki ² , H. Nomura ^{1,3} , H. Kubota ² , Y. Suzuki ^{1,3} (¹ Osaka Univ., ² AIST, ³ CSRN)	
	10:45 ~ 11:45	Chair: H. Uchida (Toyohashi Univ. Tech.)
27aB-4	Coherent signal transfer along skyrmion strings (30 min) ^o S. Seki (Univ. of Tokyo)	
27aB-5	Quantum magnonics in ferromagnetic insulators (30 min) ^{Y. Nakamura^{1,2}, ^oY. Tabuchi¹ (¹Univ. of Tokyo, ²RIKEN)}}	
	13:00 ~ 14:30	Chair: H. Awano (Toyota Tech. Inst.)
27pB-1	Machine-learning computation utilizing spin waves (30 min) ^o R. Nakane, G. Tanaka, A. Hirose (Univ. of Tokyo)	
27pB-2	Magnon transistor for next generation computing (30 min) ^o K. Sekiguchi (Yokohama National Univ.)	
27pB-3	Logic gates using spin waves (30 min) ^o T. Goto (Toyohashi Univ. Tech.)	

Magneto optics • imaging		14:45 ~ 16:00	Chair: M. Takezawa (Kyushu Inst. Tech.)
27pB-4	Local magnetic property evaluation of carbon steel by magneto-optical effect ^o S. Muroi ¹ , T. Takase ¹ , K. Yamaguchi ¹ , T. Uchimoto ² , T. Takagi ² (¹ Fukushima Univ., ² Tohoku Univ.)		
27pB-5	FDTD simulation of faraday effect and magneto-optical kerr effect for composite structure with square arranged Au particles/Bi:YIG ^o Y. Itabashi ¹ , S. Ilham ¹ , K. Takada ¹ , S. Mito ² , A. Fedyanin ³ , T. Goto ¹ , Y. Nakamura ¹ , P. Lim ¹ , H. Uchida ¹ , M. Inoue ¹ ⁽¹ Toyohashi Univ. Tech., ² Tokyo Nat. Coll. Tech., ³ Moscow State Univ.)		
27pB-6	Scanning magnetic microscope based on x-ray magnetic circularly polarized emission ^o T. Inami ¹ , K. Sugawara ¹ , T. Nakada ² , Y. Sakaguchi ² , S. Takahashi ² (¹ QST, ² JFE-TEC)		
27pB-7	Increasing Viewing Angle and Magnifying Image for Magneto-optical 3D Display Using Microlens Array ^o K. Altankhuyag ¹ , Y. Kimura ¹ , Y. Ito ¹ , H. Horimai ² , T. Goto ¹ , Y. Nakamura ¹ , P. Lim ¹ , H. Uchida ¹ , M. Inoue ¹ ⁽¹ Toyohashi Univ. Tech., ² Holymine)		
27pB-8	Noise reduction for high speed domain observation images using machine learning and non-linear filters ^o Y. Odagiri ¹ , M. Abe ² , Y. Horaguchi ² , E. Yanagisawa ¹ , S. Meguro ¹ , M. Kawamata ² , S. Saito ² (¹ NEOARK, ² Tohoku Univ.)		

Sep. 27/Room C

Hard magnetic materials Rare earth		9:00 ~ 10:15	Chair: T. Maki (Hitachi Metal)
27aC-1	Nanoparticle Approach to the Formation of Sm(Fe _{1-x} Co _x) ₁₁ Ti Particles		^o J. Kim, T. Trinh, R. Sato, T. Teranishi (Kyoto Univ.)

- 27aC-2 Attempt for epitaxially grown particulate Sm(Fe, Ti)₁₂ films with high coercivity
^oT. Kondo¹, S. Okamoto^{1,2}, N. Kikuchi¹, O. Kitakami¹ (¹Tohoku Univ., ²ESICMM)
- 27aC-3 Magnetic properties of SmFe₁₂ magnets
^oT. Saito, F. Watanabe (Chiba Inst. Tech.)
- 27aC-4 Detection of elemental magnetization reversal events in a micropatterned hot-deformed Nd-Fe-B magnet
^oT. Yomogita¹, N. Kikuchi¹, S. Okamoto^{1,2}, O. Kitakami¹, H. Sepehri-Amin², T. Ohkubo², K. Hono², K. Hioki³, A. Hattori⁴
⁽¹⁾Tohoku Univ., ²ESICMM, ³Daido Steel, ⁴Daido Electronics)
- 27aC-5 Change in Magnetic Domain Structure for Nd-Fe-B Sintered Magnets by Compressive Stress and Elevated Temperatures
^oN. Eguchi¹, Y. Morimoto¹, M. Takezawa¹, N. Matsumoto² (¹Kyushu Inst. Tech., ²MITSUBISHI)

- Hard magnetic materials Fe compounds, ferrites** **10:30 ~ 12:00** Chair: S. Okamoto (Tohoku Univ.)
- 27aC-6 Synthesis and magnetic properties of core/shell-type CuFe₂O₄/Co_{0.8}Fe_{2.2}O₄ nanoparticles
^oS. Yamada, M. Kishimoto, E. Kita, H. Yanagihara (Univ. of Tsukuba)
- 27aC-7 Enhancement of magnetic anisotropy for FeCoN films by Al addition
^oY. Takemasa, C. Shirai, T. Hasegawa (Akita Univ.)
- 27aC-8 Phase diagram of crystal structure and magnetic properties of N added Fe, Co and their alloy films
^oC. Shirai, T. Hasegawa (Akita Univ.)
- 27aC-9 bct structure of FeCoVN films deposited on MgO substrate and SiO₂ substrate
^oY. Seki, M. Oikawa, Y. Takemasa, C. Shirai, T. Hasegawa (Akita Univ.)
- 27aC-10 Single crystal growth and magnetic properties of hexagonal ferrite Ba(Fe_{1-x}Sc_x)₁₂O₁₉
^oS. Tanaka, K. Maruyama, S. Utsumi (Tokyo Univ. Sci., Suwa)
- 27aC-11 Site-selective Co substitution in Co substituted M-type ferrite: ⁵⁹Co-NMR study
^oH. Nakamura¹, H. Nishida¹, T. Waki¹, Y. Tabata¹, C. Meny² (¹Kyoto Univ., ²IPCMS)

- Magnetic recording Heat • microwave assisted recording** **13:00 ~ 15:00** Chair: H. Suto (Toshiba)
- 27pC-1 Examination of FGL film thickness and spin torque magnetic field condition in microwave assisted magnetic recording
^oK. Kurita, F. Akagi (Kogakuin Univ.)
- 27pC-2 Effect of magnetostatic interaction with MAMR head on STO oscillation
^oR. Itagaki¹, Y. Kanai¹, S. J. Greaves² (¹Niigata Inst. Tech., ²Tohoku Univ.)
- 27pC-3 Impact of Transmitted Spin from Head Pole in MAMR
^oI. Tagawa (Tohoku Inst. Tech.)
- 27pC-4 Fabrication of (001) oriented MnGa film on Si substrate using CoGa buffer layer
^oY. Miwa, D. Oshima, T. Kato, S. Iwata (Nagoya Univ.)
- 27pC-5 Magnetic properties of FePt granular media on MgO/bcc-CrMn stacked underlayer
^oT. Saito, A. Shimizu, S. Saito (Tohoku Univ.)
- 27pC-6 Control of organization and magnetic property of the Nd-Fe-B thin film with different compositions of targets
^oT. Tsuchida, J. Fukushima, Y. Hayashi, S. Saito, H. Takizawa (Tohoku Univ.)
- 27pC-7 Microstructure evolution and magnetic properties of FePt-Cr₂O₃ granular thin films
^oI. Suzuki, H. Sepehri-Amin, Y. K. Takahashi, K. Hono (NIMS)
- 27pC-8 Effects of intergrain exchange coupling on microwave assisted magnetization switching on CoCrPt granular thin film.
^oK. Sato, N. Kikuchi, S. Okamoto, O. Kitakami, T. Shimatsu (Tohoku Univ.)

- Magnetic recording Spin wave • skyrmion** **15:15 ~ 16:30** Chair: S. Tamari(AIST)
- 27pC-9 Spin wave resonance properties of magnetic dots with different aspect ratios
^oX. Ya, R. Akimitsu, T. Tanaka, K. Matsuyama (Kyushu Univ.)
- 27pC-10 Interferometric properties of standing spin waves for Co₉₀Fe₁₀ and the application to a logic device
^oR. Akimitsu, X. Ya, T. Tanaka, K. Matsuyama (Kyushu Univ.)
- 27pC-11 Simulations of the racetrack memory using a field pulse
^oR. Yamaguchi, Y. Nakatani (UEC)

- 27pC-12 Simulation of STT-MRAM with skyrmion structure
°H. Asakawa, Y. Nakatani (UEC)
- 27pC-13 Control of a Skyrmion motion by an angelfish racetrack
°K. Migita¹, K. Yamada², Y. Nakatani¹ (¹UEC, ²Gifu Univ.)

Sep. 27/Room D

- Nanoparticles** **9:00 ~ 10:15** Chair: S. Tomita (Tohoku Univ.)
- 27aD-1 Synthesis of superparamagnetic Co-Pt nano-particles in protein cage structure, PfV crystal
°M. Taniguchi¹, Y. Shiratsuchi¹, A. Higashiura^{1,2}, R. Fukunishi¹, N. Kishida¹, E. Taguchi¹, H. Yasuda¹, R. Nakatani¹, A. Nakagawa¹ (¹Osaka Univ., ²Hiroshima Univ.)
- 27aD-2 Synthesis of Fe-Fe₃O₄ nanoparticle assembly and its dynamic magnetic properties
T. Ogawa, °Y. Sotome, S. Saito (Tohoku Univ.)
- 27aD-3 Synthesis of α'' -(Fe,M)₁₆N₂ nanoparticles obtained by hydrogen reduction and subsequent nitrogenation starting from α -(Fe,M)OOH (M=Al,V,Cr,Mn,Ni)
°M. Tobise, S. Saito (Tohoku Univ.)
- 27aD-4 Magnetization process analysis of hollow Fe₃O₄ submicron particles by small angle neutron scattering
°M. Chiba¹, S. Kobayashi¹, T. Watari¹, T. Murakami¹, J. A. Szpunar², J. Manjanna³, Y. Kawamura⁴, J. Suzuki⁴
(¹Iwate Univ., ²Saskatchewan Univ., ³Rani Channamma Univ., ⁴CROSS)
- 27aD-5 Visualized Two Types of Exchange Coupling in L1₀-FePd/ α -Fe Nanocomposite Magnets
°K. Matsumoto¹, R. Sato¹, T. Trinh¹, N. Sakuma², T. Teranishi¹ (¹Kyoto Univ., ²TOYOTA Motor)

- Thinfilms: magneto optical • dynamic properties** **10:30 ~ 11:45** Chair: S. Saito (Tohoku Univ.)
- 27aD-6 Non linear spin dynamics induced in magnetically coupled CoFeB/Pt/NiFe trilayer
°M. Yafuso¹, K. Miyazaki¹, T. Kimura^{1,2} (¹Kyushu Univ., ²RCQNS)
- 27aD-7 Change in the magnetization dynamics of Co-Fe-B thin films with temperature
°Y. Endo, H. Tanaka, T. Nguyen, H. Sato, S. Ikeda (Tohoku Univ.)
- 27aD-8 Magneto-optical effect in nanogranular films with SiN matrix
°K. Ikeda, N. Kobayashi, K. Arai (DENJIKEN)
- 27aD-9 Structure and giant Faraday effect in FeCo-BaF nanogranular films
°N. Kobayashi, K. Ikeda, T. Iwasa, K. Arai (DENJIKEN)
- 27aD-10 Non-reciprocal one-way mirrors with magneto-chiral metasurfaces in near-infrared region
°S. Tomita¹, N. Onishi², H. Yanagi², H. Kurosawa³ (¹Tohoku Univ., ²NAIST, ³NICT)

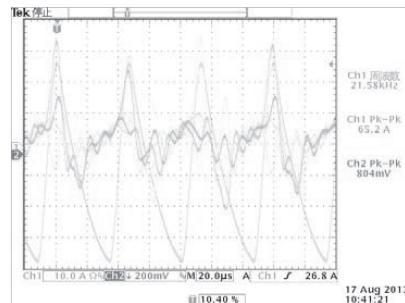
- Perpendicular magnetic anisotropy** **13:15 ~ 15:00** Chair: Y. Takamura (Tokyo Inst. Tech.)
- 27pD-1 Crystal structure and magnetic properties of FeNi alloy thin films doped with PdSb
°T. Nishino, K. Kamishima, K. Kakizaki (Saitama Univ.)
- 27pD-2 Fabrication of L1₀-FeNi films by *in-situ* denitriding method using radio frequency H₂ plasma
°M. Hayashida¹, K. Ito¹, M. Mizuguchi¹, H. Yanagihara², K. Takanashi¹ (¹Tohoku Univ., ²Univ. of Tsukuba)
- 27pD-3 Fabrication of high quality FeCo alloy thin films using the nitrogen surfactant effect
°Y. Takahashi^{1,2}, T. Miyamachi², T. Iimori², T. Hattori², K. Yamamoto³, T. Koitaya³, T. Yokoyama³, F. Komori², M. Kotsugi¹
(¹Tokyo Univ. Sci., ²ISSP, Univ. of Tokyo, ³IMS)
- 27pD-4 High coercivity in CoPt thin films on Si/SiO₂ substrates by thermal annealing
°R. Toyama¹, S. Kawachi^{1,2}, S. Iimura¹, J. Yamaura^{1,2}, Y. Murakami^{1,2}, H. Hosono¹, Y. Majima¹ (¹Tokyo Inst. Tech., ²KEK)
- 27pD-5 Film thickness dependence of static magnetic properties on TbFe ferrimagnetic alloy thin film and its suppression
°T. Hasegawa, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 27pD-6 Perpendicular magnetic anisotropy in Fe₃O₄(111)/SrTiO₃(111) sputtered epitaxial thin films
°M. Watanabe (DENJIKEN)
- 27pD-7 Investigation of magnetization dynamics in MgO / Fe / Au system
°N. Kamiya, D. Oshima, T. Kato, S. Iwata (Nagoya Univ.)

Metal thin films		15:15 ~ 16:30	Chair: S. Yoshimura (Akita Univ.)
27pD-8	Preparation and characterization of high spin polarizability $\text{Co}_2\text{TiGe}/\text{Mn}_3\text{Ge}_{0.6}\text{Ga}_{0.4}$ antiferromagnetic bilayer		^o M. Iinuma, Y. Takamura, S. Nakagawa (Tokyo Inst. Tech.)
27pD-9	Buffer layers dependence of magnetic properties for Cu_2Sb -type MnGaGe films	^o M. Sun ^{1, 2} , T. Kubota ^{1, 3} , K. Ito ^{1, 3} , S. Takahashi ⁴ , Y. Sonobe ⁴ , K. Takanashi ^{1, 3}	(¹ IMR, Tohoku Univ., ² Grad. School of Eng., Tohoku Univ., ³ CSRN, Tohoku Univ., ⁴ Samsung Research Inst. Jpn.)
27pD-10	Fabrication of (001)-textured MnAl film on CoGa buffer layer	^o D. Oshima, T. Kato, S. Iwata (Nagoya Univ.)	
27pD-11	Thickness Dependence of Magnetic Properties for $\text{Fe}_{100-x}\text{Ga}_x$ Films with Various Ga Compositions (x)	^o Y. Kawabe, T. Miyazaki, Y. Endo (Tohoku Univ.)	
27pD-12	Change in Structural Characteristics and Magnetic Properties for Co-Fe-B Thin Films with Thickness	^o H. Tanaka, T. Miyazaki, Y. Endo (Tohoku Univ.)	
Oxide • nitride thin films		16:45 ~ 17:45	Chair: T. Ogawa (Tohoku Univ.)
27pD-13	Epitaxial growth of $\epsilon\text{-Fe}_2\text{O}_3$ (001) layer by RF magnetron sputtering	^o M. Watanabe (DENJIKEN)	
27pD-14	Influence of oxygen concentration of sputtering target on the magnetic and dielectric properties of BiFeO_3 based thin films in reactive pulsed DC sputtering method	^o D. Yamamoto, S. Yoshimura (Akita Univ.)	
27pD-15	Guidelines for fabrication of high quality multiferroic BiFeO_3 based thin films in pulsed DC reactive sputtering method	^o K. Takeda, S. Yoshimura (Akita Univ.)	
27pD-16	Preparation and Characterization of Mn_3CuN thin films by Dynamic Aurora PLD	^o T. Kawaguchi, J. Suzuki, N. Sakamoto, H. Suzuki, N. Wakiya (Shizuoka Univ.)	

短パルス・高周波磁場測定に特化したホール素子式ガウスマーター



測定例:電磁調理器の漏れ磁場測定



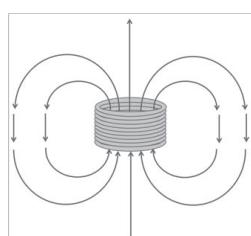
測定波形

ホール素子磁気センサーの特徴

- ・磁場発生源のベクトル方向を正確に検出···他方式のセンサーにない高い指向性がホール素子の特徴です。
- ・極小エリアの磁場を正確に検出···検出部面積 $30 \times 30\mu\text{m}$ ピンポイント測定に適しています。
- ・高いダイナミックレンジ···数mT~数T高磁場領域までの高いリニアリティを実現。

従来の高周波磁場測定の問題点である誘導ノイズ起因の誤測定を大幅に改善したガウスマーターです。

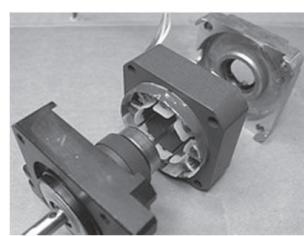
適用事例・測定のご提案



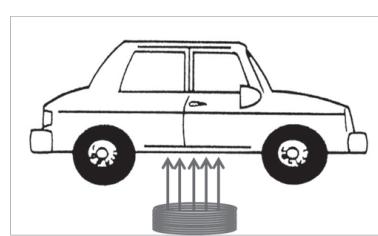
着磁パルス磁場



誘導加熱



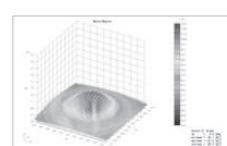
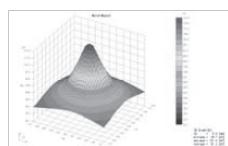
モーター、トランスの
漏洩磁場



非接触給電

3次元磁場測定装置と受託測定のご提案

- ・理論計算と実測の一致を目指しています。···センサーと測定座標の整合性評価を行います。
- ・測定の再現性を重視しています。···センサーギャップ調整を自動化。
- ・専門的な見地で受託測定及びレポートを作成···トレーサビリティに対応しています。



ガウスマーターメーカーだから出来る正確な磁界分布測定を一度お試しください。

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Email: ads@ad-s.co.jp
HP: http://www.ad-s.co.jp

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本社:〒430-0802 静岡県浜松市東区将監町38-6
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Technology Communication

Create solutions to fit the magnetic properties of industrial research and development.
TOEI science industry is challenging type device manufacturer developing new technologies

TOEISI

Vibrating Sample Magnetometer (Personal VSM)

The most remarkable features of Personal VSM are compactness and low price while maintaining high performances equal to those of conventional VSM.

The system allows remarkable reduction of floor space (approx. 1/10) and weight (approx. 1/6) comparison with other standard VSM



3D Magnetic Field Profiler

The main feature of the products is a combination of a high sensitivity field sensor and a multi-axis position control system.

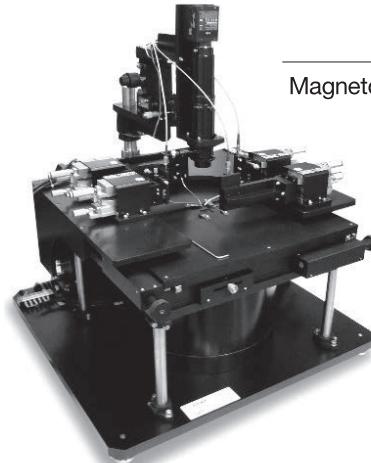
This allows high speed 3D measurements of magnetic field with a high magnetic and spatial resolution (± 0.5 Oe and $\pm 0.5\mu\text{m}$) The systems deal with the objects with a wide variety of dimensions and shapes such as permanent magnets, magnetic field sensors, electric motors and magnetic circuits.



Omni-Directional Field Prober



Longitudinal and Perpendicular Magnetic Field Prober



Main Products

- Magnetoresistance measurement system
- TMR measurement system
- Non-magnetic autoprober
- Non-magnetic semi-autoprober
- Non-magnetic manual prober
- Non-magnetic RF prober
- Non-magnetic probe card

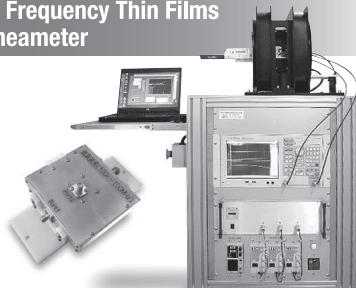
Furnaces with Magnetic Field



Magnetostriction Measurement System for Ultra-Thin Films



High Frequency Thin Films Permeameter



Low Residual Field Electromagnets

Electromagnets

Main Products: Helmholtz coil, Solenoid coil, Weiss magnet, Double yoke magnet, Bitter magnet, Variable gap magnet, Coils for optical research and others.

TOEISI

Toei Scientific Industrial co., Ltd.

Contact Us e-mail gijutsu@toei-tc.co.jp/

Engineering Dept. 1-101-60, Medeshimadai, Natori, 981-1251 Japan TEL:+81-22-382-6681, FAX:+81-22-382-6682

Head Office 8-29, 4-chome, Tomizawa, Taihaku-ku, Sendai, 982-0032 Japan TEL:+81-22-743-3221, FAX:+81-22-743-3235

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Yamagata Office TEL:+81-23-631-2761

Morioka Office TEL:+81-19-622-0365

アトミックスケール電磁場解析プラットフォーム

アトミックスケール電磁場解析プラットフォームとは？

- ナノメートル領域の電磁場測定が可能な電子顕微鏡を、研究者・開発者の皆さんに活用して頂きます。
- 電子線ホログラフィー分野を代表する国内の4機関がそれぞれの特長を活用し、最短経路での課題解決を可能にします。
- 本事業は文部科学省 先端研究基盤共用促進事業（共用プラットフォーム形成支援プログラム）として実施されます。

利用申請窓口および運営体制

- 課題申請についての問い合わせは下記窓口へ気軽にご相談ください。

当プラットフォームの
HPはこちら

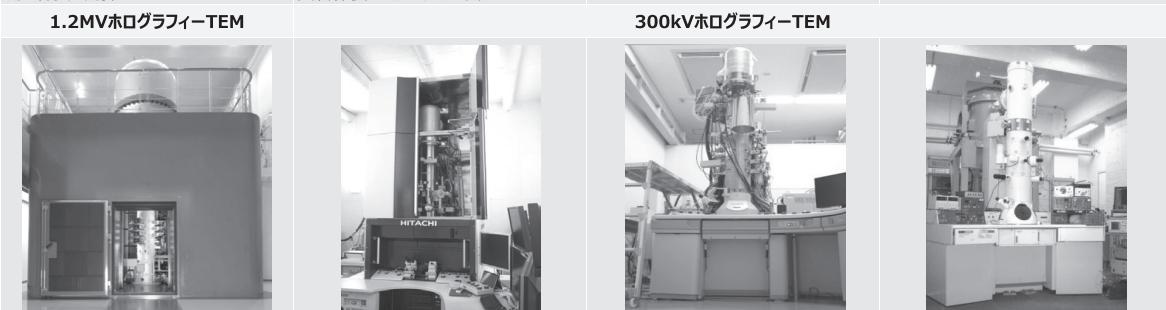
【問い合わせ窓口：atomic-scale@rdgml.intra.hitachi.co.jp】

- 成果の公開を原則としますが、非公開利用をご希望の場合は事前にご相談ください。



各拠点の特長と主な共用装置

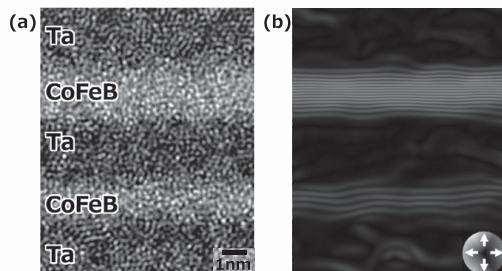
日立製作所 研究開発グループ (埼玉県)	ファインセラミックスセンター ナノ構造研究所 (愛知県)	九州大学 超顕微解析研究センター (福岡県)	東北大学 多元物質科学研究所 (宮城県)
世界唯一の収差補正機能付き超高圧ホログラフィー電顕 ^{(*)1} を所有。厚膜の計測に特長を発揮。	半導体デバイス、電池など産業界向けの計測実績多数。 試料作製のノウハウも豊富。	機能性金属材料の磁区構造解析で豊富な研究実績有り。	試料に対する外場制御など、その場観察に関わる独創的な研究実績有り。



(* 1) 本装置は総合科学技術・イノベーション会議により制度設計された最先端研究開発支援プログラム（内閣府）により、日本学術振興会の助成を受けて開発されました。

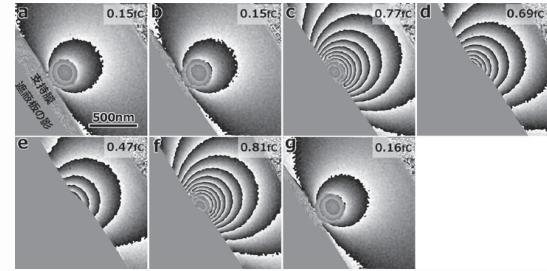
活用が期待される研究分野と応用事例

- 磁性多層膜の磁化状態をナノメートルオーダーで観察^{(*)2}



磁性層内部の磁場分布を0.67nmの空間分解能で観察した例です。
(a)はTEM像、(b)は磁束を明線で表示しています。

- 電子線ホログラフィーによる非晶質シリカ粒子の帯電状態の観察^{(*)3}



導電性支持膜上の絶縁物粒子（シリカ）の帯電の様子を観測した例です。

(* 2) T.Tanigaki, et al., *Scientific Reports*, doi: 10.1038/s41598-017-16519-7(2017)

(* 3) H. Suzuki, et al., *Microscopy* 66, 167-171 (2017)

参画機関

代表機関 (株) 日立製作所 研究開発グループ

代表者：品田 博之

実施機関 (一財) ファインセラミックスセンター ナノ構造研究所

〃：平山 司

九州大学 超顕微解析研究センター

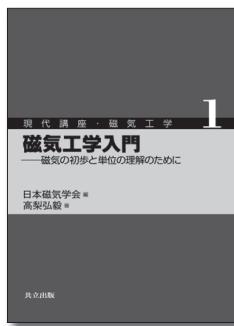
〃：村上 恭和

東北大学 多元物質科学研究所

〃：村松 淳司

現代講座・磁気工学

【各巻A5判・上製本】



本シリーズは、学部上級生から修士・若手技術者を主対象に、磁気工学における新機軸の研究対象と基礎的要素を結びつける教科書として企画・刊行。

①磁気工学入門 ー磁気の初步と単位の理解のためにー

高梨弘毅著 132頁・本体2,800円

②磁気工学の解析法

三俣千春著 236頁・本体3,400円

③スピントロニクス ー基礎編ー

井上順一郎・伊藤博介著 294頁・本体3,800円

④スピントロニクス ー応用編ー

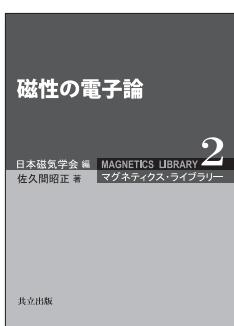
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⑤パワーマグネティクスのための応用電磁気学

早乙女英夫他著 352頁・本体4,000円

マグネティクス・ライブラリー

【各巻A5判・上製本】



本シリーズは磁気工学の基礎理論から最先端まで幅広い分野からテーマを集め、境界領域も含めて様々な研究分野に寄与する磁気の参考書として編纂。

①磁気の付随現象とその応用

井上光輝著 続刊

②磁性の電子論

日本磁気学会『平成25年度出版賞』受賞

佐久間昭正著 356頁・本体5,000円

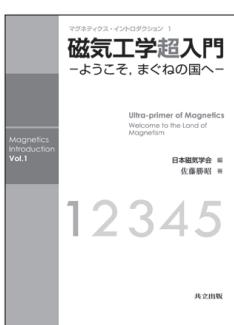
③反強磁性体 ー応用への展開ー

深道和明著 344頁・本体5,000円

④垂直磁気記録

岩崎俊一・中村慶久・大内一弘・村岡裕明・青井 基著 続刊

マグネティクス・イントロダクション 全5巻 【各巻A5判・並製本】



本シリーズは磁気の初学者とその周辺領域の読者を対象に、磁気の基礎の基礎から興味深い磁気現象や最先端の研究・技術まで、やさしく正確に解説。

①磁気工学超入門 ーようこそ、まぐねの国へー

佐藤勝昭著 166頁・本体2,500円

②メタマテリアルのつくりかた ー光を曲げる「磁場」とベリー位相ー

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③物質の中の磁気と光

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テスラメータ(磁束密度計) TM-801

使い易さはそのままに大幅な性能向上を実現!

3T(30kG)
対応



- 直流磁束密度測定の高分解能モード精度向上！
- 交流磁束密度測定の周波数対応領域の拡大！(40~500Hz)
- 乾電池による連続使用時間20%向上！(130時間→160時間)
- 乾電池・ACアダプタ・USB給電の3WAY対応！
- USB接続による外部デジタル出力が可能！
- 研究開発・品質管理に活用可能なサンプルソフトを無償ダウンロード提供！



校正証明書(メーカー校正又はJCSS校正)の発行も承ります(有償)

テスラメータ用基準磁界 TM-SMF/AMF形

標準形プローブ用

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テスラメータの日常管理・校正に！

基準磁界の校正証明取得で
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TM-SMF-050



TM-AMF-050

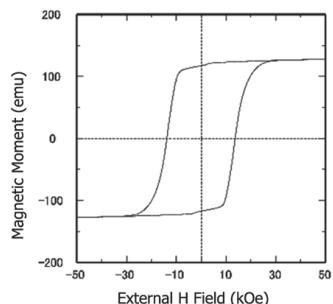
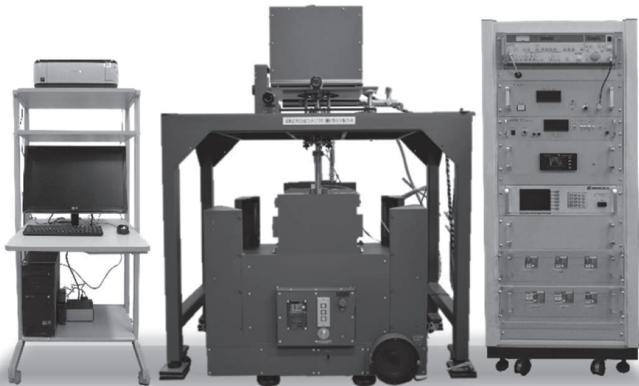
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6Tesla 無冷媒超電導マグネット式 振動試料型磁力計

Vibrating Sample Magnetometer with 6Tesla Cryogen-free Superconducting Magnet

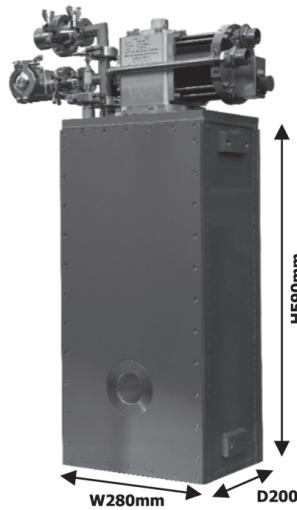
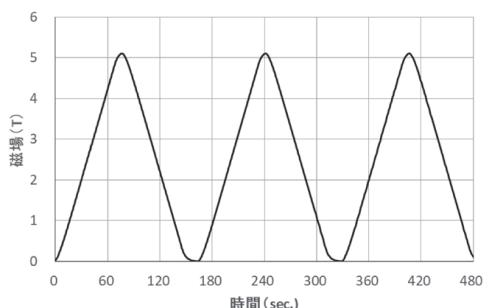


ネオジム磁石 5mmCube 測定例
6T ソレノイドコイル型
超電導マグネット



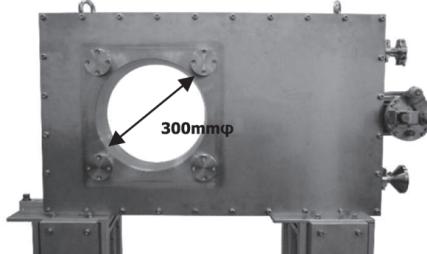
- ✓ 金属系超電導線 (NbTi) の超電導マグネットですが、冷却系統の工夫により磁界の高速な掃引が可能となりました。H_{max}5 テスラのヒステリシスループ測定において、最大 φ10mm × 21mmL のネオジム磁石を、最速 1 ループ 8 分 (0T→5T 80 秒) で測定することができます。また、1 ループ 15 分 (0T→5T 2.5 分) の測定で、例えば 2mmCube のネオジム磁石の正確な飽和磁気モーメント、残留磁気モーメント、保磁力の算出を行います。
- ✓ 超電導マグネットが測定機用として磁界の均一性が高くなるように設計されているため、φ10mm × 21mmL ネオジム磁石のような大きなサンプルも正確に測定できます。
- ✓ 高感度検出コイルと、強力かつ振幅可変の加振器との組み合わせで、6T の高磁場でサンブルを磁気的に完全に飽和させつつ、微小な磁気モーメントから 1000emu を超える磁気モーメントまで、これ 1 台で広範囲にわたって精度よく測定することができます。
- ✓ 冷凍機冷却型の超電導マグネットですので、取り扱いは極めて簡単です。スイッチを入れるだけで冷却を開始し、一定時間経過超電導コイルは約 4K まで冷却されます。

※最速 0T→5T 80 秒で掃引可能



玉川製作所の無冷媒超電導マグネットシリーズ
TAMAKAWA Superconducting Magnets

5T ソレノイドコイル



10T Nb₃Sn ソレノイドコイル



5T ソレノイドコイル

7T ヘルムホルツコイル



超電導マグネット製作実績

コイルタイプ	最大磁界	室温ボア径
ソレノイドコイル	5T	50.8mm
		200mm
		300mm
	6T	50.8mm
		70mm
	7.5T	70mm
ヘルムホルツコイル	10T	70mm
	5T	50mm
		7T

■ 当社の無冷媒超電導マグネットは設計から製作まですべて自社で行っていますので、ご希望に応じた磁場強度・ボア径や、各種装置との組み合わせなどの対応が短納期で可能です。お気軽にご相談ください。

■ 自社製ですのでアフターメンテも万全です。



株式会社玉川製作所

〒982-0014 宮城県仙台市太白区大野田三丁目 10-19

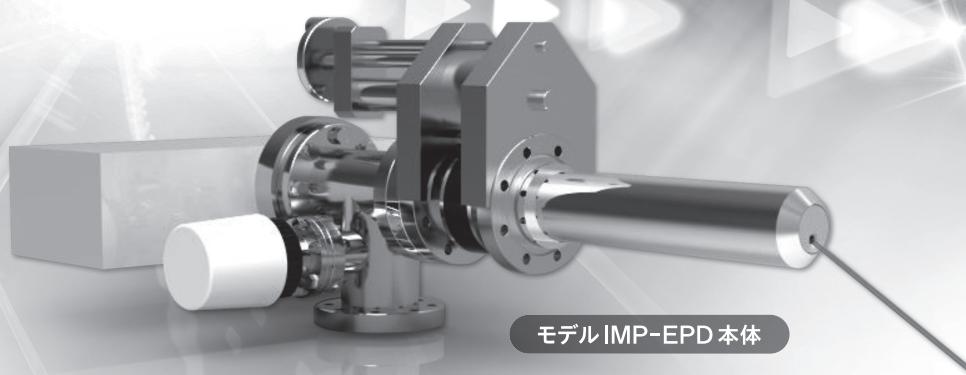
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終点検出器

イオンビームエッチングで作成される、磁気ヘッド、MEMS、
金属多層膜等のエンドポイントモニターとして、最適!!
時間制御コントロールより、
直接二次イオン(SIMS)検出コントロールへ!!

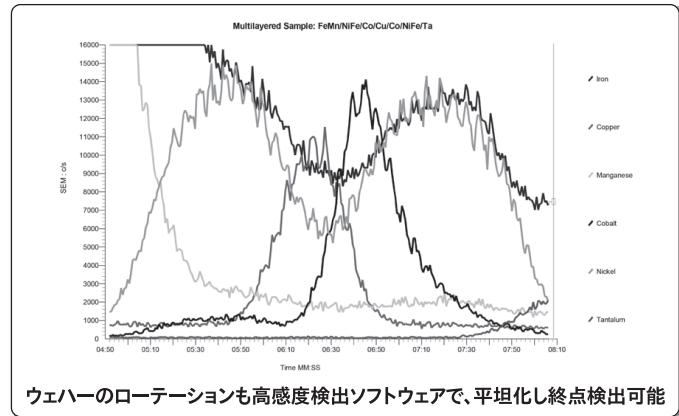
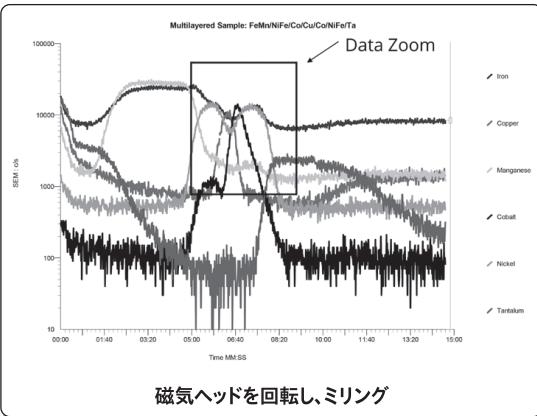
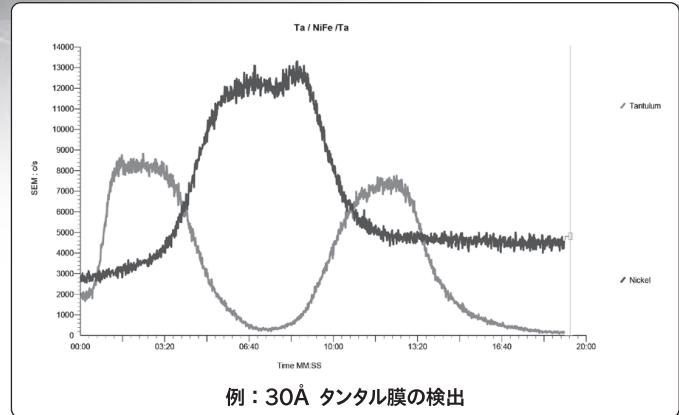
モデル IMP-EPD



モデルIMP-EPD本体

仕様

- 質量数：300m/z または、500m/z
- エンドポイント分解能： ± 5 Angstroms
- ウェハーのマスク率99.9%でも検出可能
- ウェハーの大きさ 6mm^2 でも検出可能
- プロセスコントロール(自動 or 手動)
- 様々なメーカーのイオンミリングチャンバーに、
装着実績あり
- チャンバー内の残留ガス分析や、
リークテスターとしても使用可能



»» その他、PLD用四重極質量分析計、残留ガス分析計など
多数揃えております

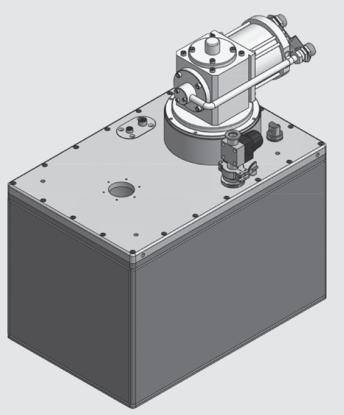
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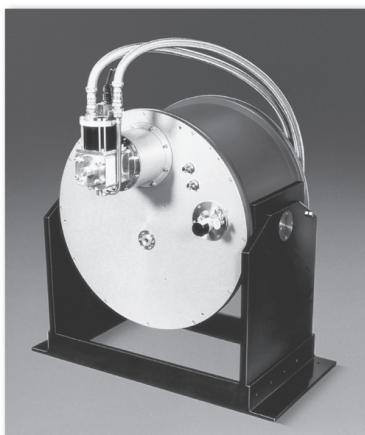
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新ミニ型テーブルトップ無冷媒マグネット

超小型無冷媒マグネットですので実験台に設置が出来ます。
縦横の方向転換、水平移動も容易です。
新マイクロ型のコンプレッサは空冷、単相AC100Vで使用できます。

磁場強度： 5T～7T
室温ボア径： 52mm
構成： 本体、空冷コンプレッサ、
バイポーラマグネット電源



無冷媒マグネット

小型高性能な無冷媒マグネットです。

磁場強度： 5T～14T
室温ボア径： 50mm～200mm
磁場均一度： 0.1%@10mm² (高均一度型はオプション)
マグネット： ソレノイド型、スプリットペア型
構成： 本体、コンプレッサ、バイポーラマグネット電源、
コンピュータコントロール



無冷媒サンプル冷却クライオスタット内蔵無冷媒マグネット

完全無冷媒でヘリウムガス中サンプルの冷却、温度コントロール
及び超伝導マグネットの励磁が出来ます。

サンプル温度範囲： 1.6K～300K
サンプル空間： 24mm、30mm、33mm径
マグネット： ソレノイド 5T～14T、
又はスプリットペア 5T～7T
構成： 本体、コンプレッサ、バイポーラマグネット電源、
コンピュータコントロールシステム

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日本オートマティック・コントロール株式会社 理科学システム部

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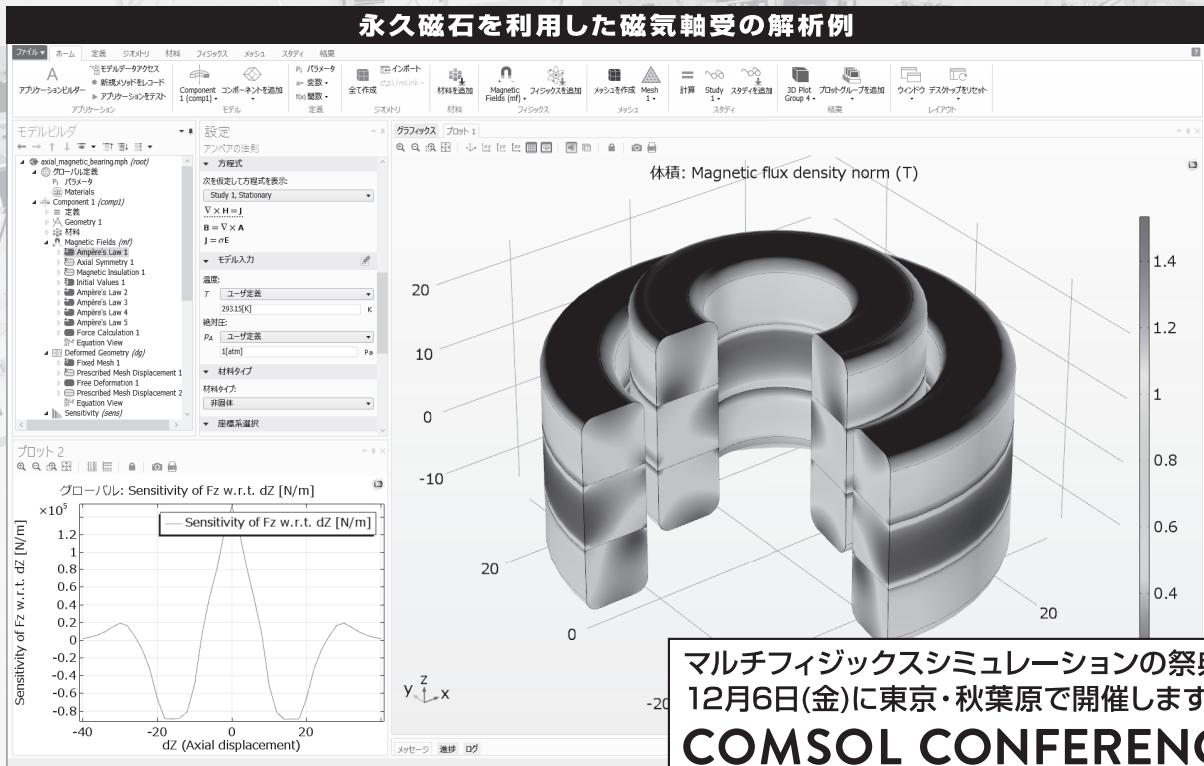
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有限要素法解析ソフトウェア COMSOL Multipysics®

マルチフィジックスの進化論

無制限・強連成で実現象に即したシミュレーション事例のご紹介

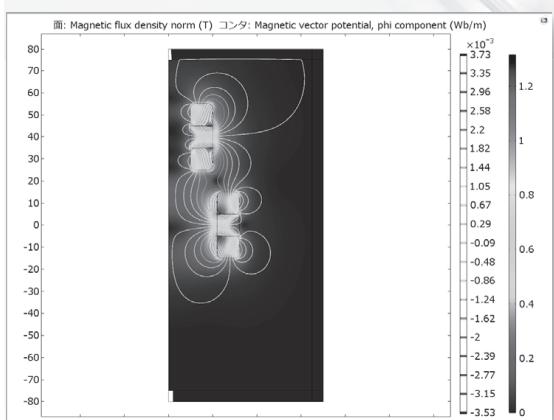


マルチフィジックスシミュレーションの祭典を
12月6日(金)に東京・秋葉原で開催します！

COMSOL CONFERENCE

2019 TOKYO

2019年12月6日(金): 秋葉原UDXギャラリー/ネクスト
<https://kesco.co.jp/conference/>



永久磁石を使用した磁気軸受の解析例

永久磁石を使用した軸受はターボ機械、ポンプ、モータ、発電機やフライホイール式エネルギー貯蔵システムなど、様々な分野で使用されています。非接触かつ潤滑不要で保守整備を大幅に省略できる点は、従来の機械式ベアリングと比べて重要なメリットです。この例では、軸方向の永久磁石軸受の磁気力と剛性などの設計パラメータを計算する方法を示しています。

※AC/DCモジュールはCOMSOL Multipysicsと併用するアドオン製品です。

AC/DC モジュールの適用例

- AC/DC 電流分布、電場分布
- バイオヒーティング
- コイルとソレノイド
- SPICE 回路とフィールドシミュレーション
- 接触抵抗
- 電磁両立性 (EMC) および電磁妨害 (EMI)
- 電磁力およびトルク
- 電磁カシード
- 電気機械の変形
- ホール効果を利用したセンサ
- インシレータ、コンデンサ、誘電体
- モータ、ジェネレータ、および他の電気機械
- 非線形材料
- 寄生容量とインダクタンス
- 永久磁石と電磁石
- 多孔質材料
- 抵抗および誘導加熱
- センサ
- 超伝導体
- 変圧器とインダクタ

COMSOL Multipysics® なら、今まで不可能だった3種以上のマルチフィジックス解析を強連成で実現できます。30日間全機能無料トライアル、無料の導入セミナー、1000種を超える世界の様々な事例をご提供いたします。詳しくは、下記の弊社営業部までお問い合わせください。

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<http://www.comsol.jp>

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