

PROGRAM

Sep. 27/Room A

Symposium "Multiscale Analysis of Magnetic Materials: Numerical Electromagnetic Field Analysis of Materials, Magnetic Devices, Motors, and Power Electronics"

Chief Organizer: Y. Takamura (Tokyo Inst. Tech.)

10:00 ~ 12:00

Chair: Y. Takamura (Tokyo Inst. Tech.)

- 27aA-1 Market Research on Electrical Motor and Power Electronics Technology and Magnetic Material Multi-Scale Analysis
°K. Fujisaki¹, T. Hosotani², T. Urakabe³, Y. Takamura³, Y. Matsumoto⁴
(¹Toyota Tech. Inst., ²muRata, ³Tokyo Inst. Tech., ⁴Fuji Electric)
- 27aA-2 Withdrawn
- 27aA-3 Investigation of iron-rich FeSi alloys by first-principles phase field and special quasirandom structure methods
°K. Ohno^{1,3}, R. Kuwahara², R. Sahara³, Y. Kawazoe⁴, K. Fujisaki⁵
(¹Yokohama National Univ., ²Dassault Systemes, ³NIMS, ⁴Tohoku Univ., ⁵Toyota Tech. Inst.)
- 27aA-4 A trial to evaluate the magnetic parameters in the LLG equation from the first principles
°A. Sakuma (Tohoku Univ.)
- 27aA-5 Magnetic moment and magnetocrystalline anisotropy energy of Fe, Ni, and Co using first-principles calculations
°F. Akagi, R. Namiki, T. Yayama (Kogakuin Univ.)

13:00 ~ 14:30

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

- 27pA-1 Magnetoelastic Interaction Modeling of Polycrystalline Magnetic Materials
°T. Matsuo (Kyoto Univ.)
- 27pA-2 Analytical modeling of Litz wire copper loss for high-frequency high-efficiency power magnetic device design
°K. Umetani, S. Kawahara, M. Ishihara, E. Hiraki (Okayama Univ.)
- 27pA-3 Quasi-static electromagnetic eddy current analysis based on Darwin model considering both inductance and capacitance effects
°H. Kaimori (SSIL)

Electromagnetic levitation • Actuator

14:45 ~ 16:30

Chair: K. Nakamura (Tohoku Univ.)

- 27pA-4 Linear Actuator for High-Speed Reciprocating Motion (Fundamental Consideration of Thrust on Ratio of Permanent Magnet Size)
°J. Kuroda¹, K. Kimura¹, M. Tanaka¹, D. Uchino¹, K. Ogawa², T. Kato³, K. Ikeda⁴, A. Endo⁵, T. Narita¹, H. Kato¹
(¹Tokai Univ., ²AUT, ³Tokyo Univ. Tech., ⁴Hokkaido Univ. Sci., ⁵FIT)
- 27pA-5 Linear Actuator for High-Speed Reciprocating Motion Using Dual-Halbach Array (Fundamental Consideration on Shape Permanent Magnet Array in Stator)
°M. Tanaka¹, K. Kimura¹, J. Kuroda¹, D. Uchino¹, K. Ogawa², T. Kato³, K. Ikeda⁴, A. Endo⁵, H. Kato¹, T. Narita¹
(¹Tokai Univ., ²Aichi Univ. Tech., ³Tokyo Univ. Tech., ⁴Hokkaido Univ. Sci., ⁵FIT)
- 27pA-6 A Study on Linear Actuator for Intake and Exhaust Valve Drive (Fundamental Consideration of Permanent Magnet Arrangement in Actuator)
°K. Kimura¹, J. Kuroda¹, M. Tanaka¹, D. Uchino¹, K. Ogawa², T. Kato³, K. Ikeda⁴, A. Endo⁵, T. Narita¹, H. Kato¹
(¹Tokai Univ., ²Aichi Univ. of Tech., ³Tokyo Univ. of Tech., ⁴Hokkaido Univ. of Sci., ⁵FIT)
- 27pA-7 Development of Non-Contact Actuator Using Cylindrical Linear Induction Motor (Fundamental Consideration on Effect of Tether Diameter)
°H. Nosaka¹, J. Kuroda¹, D. Uchino¹, K. Ogawa², K. Ikeda³, T. Kato⁴, A. Endo⁵, T. Narita¹, H. Kato¹
(¹Tokai Univ., ²AUT, ³Hokkaido Univ. Sci., ⁴Tokyo Univ. Tech., ⁵FIT)

- 27pA-8 Electromagnetic levitation and transportation system for bent ultra-thin steel plate(Fundamental Consideration on Shape of Levitated Steel Plate with Change of Place Applying Tension)
 °T. Nagayoshi¹, Y. Ichikawa¹, S. Kawamura¹, J. Kuroda¹, D. Uchino¹, K. Ogawa², A. Endo³, K. Ikeda⁴, T. Kato⁵, T. Narita¹, H. Kato¹ (¹Tokai Univ., ²AUT, ³FIT, ⁴Hokkaido Univ. Sci., ⁵Tokyo Univ. Tech.)
- 27pA-9 Electromagnetic Levitation System for Excited Bending Flexible Steel Plate(Fundamental Consideration on Vibration Characteristics of Levitated Steel Plate)
 °Y. Uchida¹, K. Ogawa², I. Kobayashi¹, J. Kuroda¹, D. Uchino¹, K. Ikeda³, T. Kato⁴, A. Endo⁵, T. Narita¹, H. Kato¹ (¹Tokai Univ., ²Aichi Univ of Tech., ³Hokkaido Univ of Sci, ⁴Tokyo Univ of Tech, ⁵FIT)
- 27pA-10 Electromagnetic Levitation System for Thin Steel Plate Using Electromagnets and Permanent Magnets (Fundamental Consideration of Optimized Arrangement of Permanent Magnets on Applying Position of Tension)
 °Y. Ichikawa¹, T. Nagayoshi¹, S. Kawamura¹, K. Ogawa², J. Kuroda¹, D. Uchino¹, K. Ikeda³, T. Kato⁴, A. Endo⁵, T. Narita¹, H. Kato¹ (¹Tokai Univ., ²AUT, ³Hokkaido Univ. Sci, ⁴Tokyo Univ. Tech, ⁵FIT)

Sep. 27/Room B

Highly spin-polarized materials, semiconductor 9:00 ~ 10:15 Chair: S. Yamada (Osaka Univ.)

- 27aB-1 Sputter growth and anisotropic magnetoresistance effect in epitaxial thin films of Mn-based Heusler alloys: Mn₂VGa and Mn₂VAL
 °H. Suto¹, V. Barwal¹, Z. Li¹, K. Masuda¹, T. Sasaki¹, S. Kokado², Y. Sakuraba¹ (¹NIMS, ²Shizuoka Univ.)
- 27aB-2 Electronic Structures of Fe₄N Thin Films Revealed by Spin-ARPES
 °K. Nakanishi¹, K. Ohwada¹, K. Kuroda¹, K. Sumida², K. Miyamoto¹, T. Okuda¹, H. Sato¹, S. Isogami³, K. Masuda³, Y. Sakuraba³, A. Kimura¹ (¹Hiroshima Univ., ²JAEA, ³NIMS)
- 27aB-3 Bulk-sensitive spin-resolved electronic structures of Co₂MnSi
 °S. Ueda, Y. Miura, Y. Fujita, Y. Sakuraba (NIMS)
- 27aB-4 Estimation of valley splitting energy in strained Si_{0.1}Ge_{0.9} by lateral spin transport measurements and effect of impurity scattering at low temperatures
 °T. Okada¹, K. Kawashima¹, M. Yamada¹, T. Naito¹, Y. Wagatsuma², K. Sawano², K. Hamaya¹ (¹Osaka Univ., ²Tokyo City Univ.)
- 27aB-5 Conductive Nanocarbon Ohmic Electrode and Evaluation of Spin Injection into Spin Valve Devices Utilizing Single Crystal Diamond
 °A. Watatani¹, K. Maki¹, S. M. Valappil¹, K. Sakai², S. Oomagari³, T. Yoshitake¹ (¹Kyushu Univ., ²Nit, Kurume College., ³AIST)

Spin wave 10:30 ~ 12:00 Chair: K. Yamanoi (Keio Univ.)

- 27aB-6 External magnetic field dependence of formation of magnetostatic surface spin-wave soliton
 °T. Iwata, K. Sekiguchi (Yokohama National Univ.)
- 27aB-7 Scaling of memory capacity for high-performance spin-wave reservoir computing
 °S. Iihama, Y. Koike, S. Mizukami, N. Yoshinaga (Tohoku Univ.)
- 27aB-8 Threshold power of parametrically excited spin waves in cubic anisotropic materials
 °S. Nezu¹, T. Scheike², H. Sukegawa², K. Sekiguchi¹ (¹Yokohama National Univ., ²NIMS)
- 27aB-9 Development of nano-scaled spin-wave amplifier using feedback structure
 °M. Iwaba, K. Sekiguchi (Yokohama National Univ.)
- 27aB-10 Time-domain electrical detection of spin waves in Y-shaped microstructures
 °R. Hayashi, S. Nezu, K. Sekiguchi (Yokohama National Univ.)
- 27aB-11 Physical reservoir devices using excitation and observation of spin-wave via antenna method
 °S. Nagase, S. Nezu, K. Sekiguchi (Yokohama National Univ.)

Spin dynamics I 13:00 ~ 14:15 Chair: M. Goto (Fukui Univ.)

- 27pB-1 All-optical investigation of sub-THz magnetization dynamics in Cu₂Sb-type (Mn-Cr)AlGe ultrathin film
 °Y. Sasaki¹, R. Hiramatsu², Y. Kota³, T. Kubota², Y. Sonobe¹, A. Sakuma², K. Takanashi^{2,4}, S. Kasai¹, Y. K. Takahashi¹ (¹NIMS, ²Tohoku Univ., ³NIT, Fukushima Coll., ⁴JAEA)

- 27pB-2 Broadband polarization-selective magnetic resonance spectroscopy using circularly-polarized microwave field in perpendicularly-magnetized synthetic antiferromagnets
 °Y. Shiota¹, T. Arakawa², R. Hisatomi¹, T. Moriyama¹, T. Ono¹ (¹Kyoto Univ., ²AIST)
- 27pB-3 by Electrical detection of antiferromagnetic dynamics in thin films using gyrotron
 S. Funada¹, Y. Ishikawa², M. Kimata³, Y. Yamaguchi², K. Hayashi², T. Sano², Y. Fujii², S. Mitsudo², Y. Shiota¹, T. Ono¹, °
 T. Moriyama⁴ (¹ICR, ²FIR, ³IMR, ⁴eng.)
- 27pB-4 Observation of dispersion relation for hybridized magnons in synthetic antiferromagnets
 °D. Hayashi, Y. Shiota, M. Ishibashi, R. Hisatomi, T. Moriyama, T. Ono (Kyoto Univ.)
- 27pB-5 Laser-induced terahertz emission in Fe₄N/Pt bilayers with negative spin polarization
 °S. Isogami, Y. Sasaki, Y. Takahashi (NIMS)

Spin dynamics II

14:30 ~ 16:00

Chair: Y. Shiota (Kyoto Univ.)

- 27pB-6 Amplified transport of low-energy magnons in Bi-doped YIG by local heating
 °R. Kohno¹, K. An^{1,2}, V. Naletov¹, J. Ben Youssef³, D. Gouere⁴, V. Cros⁴, A. Anane⁴, G. De Leubens⁴, L. Vila¹, O. Klein¹
 (¹Univ. Grenoble Alpes, ²KRISS, ³Univ. Bretagne Occidentale, ⁴Univ. Paris-Saclay)
- 27pB-7 Strong-coupled magnetic resonance in topological-insulator/magnetic-insulator bilayers
 °T. Chiba¹, T. Komine², T. Aono² (¹FRIS Tohoku Univ., ²Ibaraki Univ.)
- 27pB-8 Dependence of structure and magnetic properties on the Si compositions for Fe-Si thin films
 °Y. Jiang, S. Muroga, T. Miyazaki, Y. Endo (Tohoku Univ.)
- 27pB-9 Inverse magneto-optical effect in Co-Pt disordered alloy films
 °K. Nukui, S. Iihama, S. Mizukami (Tohoku Univ.)
- 27pB-10 Phonon-magnon conversion probed by acoustoelectric current
 °H. Matsumoto^{1,2}, Y. Todaka², I. Yasuda², T. Kawada^{2,3}, M. Kawaguchi², M. Hayashi²
 (¹Kyoto Univ., ²Univ. of Tokyo, ³Osaka Univ.)
- 27pB-11 Spiking neuron model using coupled spin-torque-oscillators
 °T. Ise, S. J. Greaves, Y. Tanaka (Tohoku Univ.)

Domain Wall, Skyrmion

16:15 ~ 17:15

Chair: K. Ueda (Osaka Univ.)

- 27pB-12 The connected-skyrmions stabilized in a nanowire
 °T. Nishitani¹, S. Honda^{1,2}, H. Itoh^{1,2} (¹Kansai Univ., ²Osaka Univ.)
- 27pB-13 Relationship between the strength of inter-grain exchange coupling and the thermal stability of the skyrmion magnetization configuration in magnetic thin film patterns
 °S. Onaka¹, X. Ya², T. Tanaka¹ (¹Kyushu Univ., ²Chongqing College of Electronic Engineering)
- 27pB-14 Polarity dependence of the chiral rotation in the Brownian motion of a single magnetic skyrmion
 °S. Miki^{1,2,3}, A. Shimmura¹, M. Goto^{1,2,3}, E. Tamura^{1,2,3}, Y. Shiota^{4,5}, M. Oogane⁶, J. Cho⁷, C. You⁷, R. Ishikawa⁸,
 H. Nomura^{1,2,3}, Y. Suzuki^{1,2,3}
 (¹Osaka Univ., ²OTRI-Osaka, ³CSRN-Osaka, ⁴Kyoto Univ., ⁵CSRN-Kyoto, ⁶Tohoku Univ., ⁷DGIST, ⁸ULVAC)
- 27pB-15 Magneto-optical observation of recorded domain shift in magnetic nanowire memory with step trap-sites
 °D. Kato, K. Ogura, M. Takahashi, Y. Iguchi, Y. Miyamoto (NHK)

Voltage control of magnetic anisotropy

17:30 ~ 18:15

Chair: T. Koyama (Osaka Univ.)

- 27pB-16 Voltage-controlled magnetic anisotropy in Fe/Ir/Co/MgO/ZrO₂ structures
 °H. Onoda, T. Nozaki, T. Nozaki, S. Yuasa (AIST)
- 27pB-17 Underlayer effect on the voltage-controlled magnetic anisotropy in interface engineered Co/MgO junctions with heavy metals
 °H. Nakayama, T. Nozaki, T. Nozaki, S. Yuasa (AIST)
- 27pB-18 Optimization of efficiency in voltage-controlled magnetic anisotropy effect using an ultrathin CoFeB layer deposited at low temperature
 °T. Nozaki¹, T. Ichinose¹, T. Yamamoto¹, J. Uzuhashi², M. Konoto¹, K. Yakushiji¹, T. Ohkubo², S. Yuasa¹ (¹AIST, ²NIMS)

Sep. 27/Room C

Alloy thin films

9:00 ~ 10:30

Chair: K. K. Tham (TANAKA)

- 27aC-1 Spontaneous magnetization and short- and long-range order in single crystalline $\text{Fe}_{0.6}\text{Al}_{0.4}$ film
°K. Toyoki, D. Kitaguchi, Y. Shiratsuchi, R. Nakatani (Osaka Univ.)
- 27aC-2 Magnetic coupling in artificial spin ice
°H. Kubota¹, S. Tsunegi¹, K. Yakushiji¹, T. Taniguchi¹, S. Tamaru¹, T. Yamamoto¹, A. Sugihara¹, R. Matsuura², H. Nomura^{2,3},
°Y. Suzuki^{1,2,3} (¹AIST, ²Osaka Univ., ³CSRN Osaka, ⁴Tohoku Univ. SRIS)
- 27aC-3 Investigation of structural and magnetic properties of electrodeposited CoPt alloy nanowires for 3D magnetic memory application
°M. Hasan¹, T. Huang², M. Saito¹, Y. Takamura², T. Homma^{1,3}
(¹Research Organization for Nano and Life Innovation, Waseda University,
²Dept. of Electrical and Electronic Eng., Tokyo Institute of Technology,
³Dept. of Applied Chemistry, Waseda University)
- 27aC-4 Elucidation of correlation between structure and magnetic properties in CoPt_{1-x} alloy nanowires in nanoporous template fabricated by electrodeposition
°N. Oguchi¹, M. Saito², T. Homma², T. Ono³, M. Shima¹, K. Yamada¹ (¹Gifu Univ., ²Waseda Univ., ³Kyoto Univ.)
- 27aC-5 Improvement of magneto-optical properties of $\text{Nd}_{0.5}\text{Bi}_{2.5}\text{Fe}_5\text{O}_{12}$ thin films by adding $\text{Bi}_3\text{Fe}_5\text{O}_{12}$ underlayer
°J. Zhang¹, F. Z. Chafi¹, M. Nishikawa¹, M. Kawahara², T. Ishibashi¹ (¹Nagaoka Univ. Tech., ²Kojundo)
- 27aC-6 Development of heater-assisted hot cathode for RF high-speed sputtering of MgO thin films
°K. Yamada¹, D. Miyazaki¹, A. Kato², Y. Hirokawa¹, S. Jeon¹, A. Shimizu¹, H. Suzuki³, T. Ohizumi³, I. Tagawa², S. Hinata¹,
T. Ogawa¹, S. Saito¹ (¹Tohoku Univ., ²Tohoku Inst. Tech., ³Arios)

Multiferroic, antiferromagnetic, electric field effect

10:45 ~ 12:15

Chair: K. Hamaya (Osaka Univ.)

- 27aC-7 Development of BiFeO_3 based multiferroic thin film materials with large saturation magnetization and perpendicular magnetic anisotropy —Effect of Co and/or Ni substitution against Fe on magnetic properties—
°Y. Suzuki, T. Ozeki, G. Egawa, S. Yoshimura (Akita Univ.)
- 27aC-8 Optimizing the Reactive Ion Etching Conditions with Minimal Damage for High Functional Magnetic Nano Device Application in BiFeO_3 -based Multiferroic Thin Films
S. Ratha, G. Egawa, °S. Yoshimura (Akita Univ.)
- 27aC-9 Fabrication and characterization of $\text{Pr}_2\text{Ir}_2\text{O}_7$ thin film by reactive MBE and solid phase epitaxy
°S. Oishi¹, S. Yokokura¹, T. Shimada¹, T. Nagahama² (¹Hokkaido Univ., ²Yamaguchi Univ.)
- 27aC-10 Finite size effect and dimensional crossover in antiferromagnetic epitaxial Cr_2O_3 thin films
°H. Sameshima¹, K. Ujimoto¹, R. Tsutsumi¹, K. Toyoki^{1,2,3}, R. Nakatani^{1,2,3}, Y. Shiratsuchi^{1,2,3}
(¹Osaka Univ., ²OTRI, Osaka Univ., ³CSRN, Osaka Univ.)
- 27aC-11 Electric-field modulation of antiferromagnetic spin reversal field in $\text{Pt}/\text{Cr}_2\text{O}_3/\text{Ir}$ trilayer
°K. Ujimoto¹, H. Sameshima¹, K. Toyoki^{1,2,3}, R. Nakatani^{1,2,3}, Y. Shiratsuchi^{1,2,3}
(¹Osaka Univ., ²OTRI, Osaka Univ., ³CSRN, Osaka Univ.)
- 27aC-12 Electric field effects on single crystal Co/Ru/Co synthetic antiferromagnets/PMN-PT
°Y. Hisada¹, S. Komori¹, K. Imura², T. Taniyama¹ (¹Dept. Phys., Nagoya Univ., ²ILAS, Nagoya Univ.)

Growth & magnetism of thin-films I

13:15 ~ 14:45

Chair: Y. Shiratsuchi (Osaka Univ.)

- 27pC-1 Epitaxial Growth of Mn-N and Cr-N Thin Films on $\text{SrTiO}_3(100)$ Single-Crystal Substrates
°R. Kuwayama¹, K. Imamura¹, M. Ohtake¹, M. Futamoto¹, S. Isogami² (¹Yokohama National Univ., ²NIMS)
- 27pC-2 Phase Formation and Transformation in Fe-N Epitaxial Thin Films Formed on $\text{MgO}(001)$ Substrates
°K. Imamura¹, Y. Maeda¹, M. Ohtake¹, M. Futamoto¹, S. Isogami² (¹Yokohama National Univ., ²NIMS)
- 27pC-3 Epitaxial Growth of Co-N Thin Films on $\text{MgO}(001)$ Single-Crystal Substrates
°K. Abe¹, K. Imamura¹, M. Ohtake¹, M. Futamoto¹, S. Isogami² (¹Yokohama National Univ., ²NIMS)
- 27pC-4 Reduction in Magnetostriction of Fe-Al(001) Single-Crystal Thin Film by N Atom Addition
°T. Sato¹, K. Imamura¹, M. Ohtake¹, T. Kawai¹, M. Futamoto¹, N. Inaba² (¹Yokohama National Univ., ²Yamagata Univ.)

27pC-5 Influences of B and N Compositions on the Structure and Magnetic Properties of Fe-B-N Alloy Film
°N. Isogai¹, T. Sato¹, K. Imamura¹, M. Ohtake¹, T. Kawai¹, M. Futamoto¹, N. Inaba²
(¹Yokohama National Univ., ²Yamagata Univ.)

27pC-6 Study on structure and magnetic properties of Fe-Ga-La thin films with various La contents
°R. Nishina, S. Muroga, T. Miyazaki, Y. Endo (Tohoku Univ.)

Growth & magnetism of thin-films II **15:00 ~ 16:30** Chair: S. Isogami (NIMS)

27pC-7 Soft magnetic properties of In-substituted Ni ferrite thin films prepared by metal organic decomposition
°K. Kashima, K. Kamishima, K. Kakizaki (Saitama Univ.)

27pC-8 Influences of Annealing on the Crystallization and the Surface Morphology of Y₃Fe₅O₁₂ Thin Film Formed on Gd₃Ga₅O₁₂(111) Single-Crystal Substrate
°R. Yokoyama, K. Imamura, R. Hayashi, T. Matsui, K. Sekiguchi, M. Ohtake (Yokohama National Univ.)

27pC-9 Effect of Substrate Material on the Formation of Y₃Fe₅O₁₂(111) Single-Crystal Thin Film
°K. Imamura, R. Hayashi, R. Yokoyama, T. Matsui, K. Sekiguchi, M. Ohtake (Yokohama National Univ.)

27pC-10 Formation of Sm(Fe,Co)₁₂ Alloy Thin Film by Molecular Beam Epitaxy
°T. Yoshida¹, Y. Nakamura¹, K. Imamura¹, M. Ohtake¹, M. Futamoto¹, N. Inaba²
(¹Yokohama National Univ., ²Yamagata Univ.)

27pC-11 Low-temperature growth (~100 °C) of magnetic Weyl semimetal Co₂MnGa thin films by molecular beam epitaxy
°S. Nagata, S. Yamada, T. Usami, K. Yamauchi, T. Oguchi, K. Hamaya (Osaka Univ.)

27pC-12 Magnetic toroidal quadrupole and anomalous Hall effect in NiCo₂O₄ thin film
°H. Koizumi^{1,2}, Y. Yamasaki³, H. Yanagihara² (¹Tohoku Univ., ²Univ. of Tsukuba, ³NIMS)

Magnetic anisotropy thin-films **16:45 ~ 18:00** Chair: M. Ohtake (Yokohama Nat. Univ.)

27pC-13 Perpendicular magnetic anisotropy of W-Cr/Fe/MgO trilayer films grown on MgO(001)
°Y. Yoshida¹, D. Oshima¹, H. Yoshikawa², A. Tsukamoto², T. Kato¹ (¹Nagoya Univ., ²Nihon Univ.)

27pC-14 Appearance of perpendicular magnetic anisotropy in Fe-Al/Cr-Al/Fe-Al multilayer
°T. Minami, K. Toyoki, Y. Shiratsuchi, R. Nakatani (Osaka Univ.)

27pC-15 Fabrication of CoPt/Pt multilayered films with perpendicular magnetic anisotropy and high squareness ratio by electrodeposition
°D. Araki¹, J. Okabayashi², Y. Takahashi^{1,3}, T. Homma¹, Y. Sonobe¹ (¹Waseda Univ., ²Univ. of Tokyo, ³NIMS)

27pC-16 Substrate heating temperature dependence of in-plane uniaxial magnetic anisotropy of Co thin films deposited on 128° Y-cut LiNbO₃ substrates
°S. Shikano¹, S. Ono², A. Yamaguchi³, M. Shima¹, K. Yamada¹ (¹Gifu Univ., ²Tohoku Univ., ³Univ. Hyogo)

27pC-17 Investigation of local distortion effect on magnetocrystalline anisotropy in α'-Fe₁₆N₂
°Y. Kota¹, A. Sakuma² (¹NIT, Fukushima Coll., ²Tohoku Univ.)

Sep. 27/Room D

Magnetic force microscopy **9:00 ~ 10:15** Chair: T. Yamada (Chiba Univ.)

27aD-1 Direct measurement of magnetic domain wall width in permanent magnets by DPC STEM
°Y. O. Murakami¹, T. Seki^{1,2}, Y. Ikuhara^{1,3}, N. Shibata^{1,3} (¹Univ. of Tokyo, ²JST-PREST, ³JFCC)

27aD-2 Development of DC magnetic field measurement and alternating magnetic force microscopy: Independent detection of magnetic field and magnetic field gradient using double air-core coils
°R. Ehara, T. Matsumura, H. Sonobe, H. Saito (Akita Univ.)

27aD-3 Domain wall displacement imaging of soft magnetic film by alternating magnetic force microscopy: Fabrication of composited air core coils for controlling magnetic field direction
°K. Suzuki, M. V. Makarova, H. Sonobe, T. Matsumura, H. Saito (Akita Univ.)

27aD-4 Detection method of ferromagnetic resonance by using traveling-wave waveguide antenna for alternating magnetic force microscopy for high-frequency magnetic field imaging
°N. Umeda, K. Hayashi, M. Marina, H. Sonobe, T. Matsumura, H. Saito (Akita Univ.)

- 27aD-5 Development of 12-40 GHz traveling-wave waveguide antennas for alternating magnetic force microscopy for high-frequency magnetic field imaging
 °K. Hayashi, N. Umeda, M. Makarova, H. Sonobe, T. Matsumura, H. Saito (Akita Univ.)

Measurement of high-frequency magnetic field **10:30 ~ 12:00** Chair: H. Saito (Akita Univ.)

- 27aD-6 Selective detection of high frequency magnetic field by using a fundamental mode orthogonal fluxgate
 °I. Sasada (Kyushu Univ.)
- 27aD-7 Evaluation of high frequency response for magnetic garnet film
 °S. Hashi¹, K. Yoshihara¹, Y. Saito², K. Ishiyama³ (¹Tohoku Gakuin Univ., ²Lancaster Univ., ³Tohoku Univ.)
- 27aD-8 Higher-frequency permeability measurement using shielded loop coil method
 T. Nakamura¹, Y. Sato¹, A. Itagaki¹, Y. Miyazawa², °M. Yamaguchi² (¹Ryowa Elec., ²Tohoku Univ.)
- 27aD-9 Compensation compositions for magnetization and angular momentum in Bi, Ga-substituted Eu garnets
 °W. Asano¹, M. Md Abdullah Al¹, T. Nishi², D. Oshima³, T. Kato³, K. Lee⁴, M. Kawahara⁵, F. Z. Chafi¹, M. Nishikawa¹,
 T. Ishibashi¹ (¹Nagaoka Univ. Tech., ²Kobe City Coll. Tech., ³Nagoya Univ., ⁴Sogang Univ., ⁵Kojundo)
- 27aD-10 Measurement of magnetization process in several MHz range
 °H. Tanaka, T. Mannen, T. Isobe, E. Kita, H. Yanagihara (Univ. of Tsukuba)
- 27aD-11 Observation of Crosstalk by Near Magnetic Field Measurement Including Phase Information
 °Y. Sugawara, T. Goto, K. Ishiyama (Tohoku Univ.)

Symposium "Optical control and time-resolved measurement of magnetic dynamics"

Chief Organizer: T. Ishibashi (Nagaoka Univ. Tech.), K. Tanabe (Toyota Tech. Inst.)

13:00 ~ 14:30

Chair: T. Ishibashi (Nagaoka Univ. Tech.)

- 27pD-1 Ultrafast optical control of magnetization dynamics in ferrimagnet with antiferromagnet-like spin order
 °A. Tsukamoto (Nihon Univ.)
- 27pD-2 Magnetization switching in Pt/Co/Pt multilayers by circularly polarized ultrashort optical pulses
 °K. T. Yamada (Tokyo Inst. Tech.)
- 27pD-3 Spin dynamics in ferromagnetic and antiferromagnetic thin films studied by ultrafast lasers
 °H. Wadati (Univ. Hyogo)

14:45 ~ 16:15

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

- 27pD-4 Nonlinear and linear X-ray magnetic spectroscopy by ultrashort pulse X-ray lasers
 °I. Matsuda (Univ. of Tokyo)
- 27pD-5 High throughput magneto-optical imaging and unconventional spin-wave dynamics
 °T. Hioki (Univ. of Tokyo)
- 27pD-6 Observation of exchange bias switching using time-resolved magneto-optical Kerr microscopy
 °T. Taniguchi¹, Y. Wang², P. Lin³, D. Zicchino⁴, A. Nickl⁴, J. Sahliger⁴, C. Lai³, C. Song², H. Wu², Q. Dai², C. Back⁴
 (¹Tohoku Univ., ²Tsinghua Univ., ³Nat. Tsing Hua Univ., ⁴TU Muenchen)

Sep. 27/Room E

Magnetic beads, biosensing **12:30 ~ 14:15** Chair: T. Yoshida (Kyushu Univ.)

- 27pE-1 Simulation Study of Magnetic Promotion for Rapid Immunoassay Utilizing Magnetic Nanoparticles
 °T. Tanaka (Aichi Univ. of Tech.)
- 27pE-2 Evaluation of magnetic relaxation of magnetic nanoparticles in living tumor
 °H. Kosaka¹, K. Honda¹, M. Futagawa¹, K. Shimizu², Y. Takemura³, S. Ota¹
 (¹Shizuoka Univ., ²Hamamatsu Univ. School of Medicine, ³Yokohama National Univ.)
- 27pE-3 Measurements of magnetic relaxation of magnetic nanoparticles by applying the pulsed magnetic field
 °H. Goto¹, M. Futagawa¹, Y. Takemura², S. Ota¹ (¹Shizuoka Univ., ²Yokohama National Univ.)
- 27pE-4 Evaluation of magnetic properties of magnetic nanoparticles in living adherent cells
 °M. Nishida¹, Y. Kurashina², M. Futagawa¹, Y. Takemura³, S. Ota¹ (¹Shizuoka Univ., ²TUAT, ³Yokohama National Univ.)

- 27pE-5 Magnetic linear birefringence of magneto-liposome suspension under ac field
 °M. Suwa, M. Higuchi, Y. Okamoto, S. Tsukahara (Osaka Univ.)
- 27pE-6 Measurement of bacteria using magnetic beads by switching magnetic field
 °K. Kaneko, T. Murayama, J. Honda, L. Tonthat, K. Okita, S. Yabukami (Tohoku Univ.)
- 27pE-7 Development of magnetic nanoparticle dispersion method using femtosecond laser
 °S. Asayama, S. Kako, T. Yamamoto, K. Yamashita, J. Wang, T. Kiwa (Okayama Univ.)

Medical applications, magnetic particle imaging **14:30 ~ 16:30** Chair: S. Ota (Shizuoka Univ.)

- 27pE-8 Narrowband frequency-modulated magnetization signal measurement using magnetoresistive sensor for long-range magnetic nanoparticle detection under low excitation field
 °S. Trisnanto¹, T. Kasajima², T. Shibuya², Y. Takemura¹ (¹Yokohama National Univ., ²TDK)
- 27pE-9 Remote detection of magnetic nanoparticles by using flux transformer and magnetoresistive sensor
 °S. Nabeta¹, S. Noguchi¹, S. B. Trisnanto¹, T. Kasajima², T. Shibuya², Y. Takemura¹ (¹Yokohama National Univ., ²TDK)
- 27pE-10 Feasibility of active magnetic shield with flat panel shape
 °S. Odawara, M. Sakakibara (OHTAMA)
- 27pE-11 Construction of a water-cooling system in magnetic nanoparticle tomography
 °M. Fujimoto, N. Futagawa, T. Sasayama, T. Yoshida (Kyushu Univ.)
- 27pE-12 Investigation of reducing the acquisition time of the system matrix in magnetic nanoparticle tomography
 °N. Futagawa, M. Fujimoto, T. Sasayama, T. Yoshida (Kyushu Univ.)
- 27pE-13 Development of magnetic particle imaging scanner using superconducting gradient magnetic field coils
 °Y. Kamei¹, T. Nagano¹, H. Sasa¹, T. Sasayama¹, Y. Takemura², T. Yoshida¹ (¹Kyushu Univ., ²Yokohama National Univ.)
- 27pE-14 Quantitative evaluation of viscous effects on the relaxation time of magnetic nanoparticles
 °M. Washino¹, K. Nomura¹, T. Matsuda¹, S. Seino², T. Nakagawa², T. Kiwa³, A. Tanaka⁴, T. Sakane⁴
 (¹MITSUBISHI, ²Osaka Univ., ³Okayama Univ., ⁴Kobe Pharmaceutical Univ.)
- 27pE-15 Development of in vitro magnetic particle imaging method using relaxation time difference
 °K. Nomura¹, M. Washino¹, T. Matsuda¹, S. Seino², T. Nakagawa², T. Kiwa³ (¹MITSUBISHI, ²Osaka Univ., ³Okayama Univ.)

Sep. 27/Poster Room

Poster session I (Physics of Magnetism, Utilization of High Magnetic Fields, Hard and Soft Magnetic Materials, Power Magnetism, Measurement Technique, High frequency Devices, Magnetic Imaging, Biomagnetism and Medical Application, Magnetic Recording)

15:45 ~ 18:00

Chair: K. Yamanoi (Keio Univ.)

- 27pPS-1 Temperature dependence of magnetostrictive properties of $\text{Cu}_x\text{Co}_{1-x}\text{Fe}_2\text{O}_4$
 °S. Kosugi, M. Hisamatsu, S. Fujieda, Y. Ohishi, H. Muta, S. Seino, T. Nakagawa (Osaka Univ.)
- 27pPS-2 Development of real-time and high-speed magnetic domain measurement system for iron loss analysis and Application of machine learning
 °R. Nagaoka¹, K. Masuzawa¹, A. L. Foggatto¹, C. Mitsumata¹, T. Yamazaki¹, I. Obayashi², Y. Hiraoka³, M. Kotsugi¹
 (¹Tokyo Univ. Sci., ²Okayama Univ., ³Kyoto Univ.)
- 27pPS-3 Magneto refractive effect in nano-imprinted GeFeCo nano-wires
 °S. Sumi, K. Tanabe, H. Awano (Toyota Tech. Inst.)
- 27pPS-4 Magnetization reversal with circularly polarized light in dot patterned FePt thin films
 °T. Homma¹, H. Sakaguchi¹, S. Nakazawa¹, Y. Sasaki², S. Isogami², Y. K. Takahashi², T. Ishibashi¹
 (¹Nagaoka Univ. Tech., ²NIMS)
- 27pPS-5 Enhancement of coercivity for grain boundary diffused $\text{Sm}(\text{Fe-Co})_{12}$ -B thin films by the introduction of Sm seed layer
 °Y. Mori, S. Nakatsuka, S. Hatanaka, M. Doi, T. Shima (Tohoku Gakuin Univ.)
- 27pPS-6 Synthesis conditions and magnetic properties of $\text{SrNi}_x\text{Zn}_{2-x}$ -W-type hexaferrites
 °K. Ishino, S. Fujieda, S. Seino, T. Nakagawa (Osaka Univ.)
- 27pPS-7 N_2 partial pressure dependence of magnetic properties Fe-Ga-N thin film
 °K. Suzuki¹, T. Hino¹, Y. Fujiwara¹, M. Jimbo¹, D. Oshima², T. Kato² (¹Mie Univ., ²Nagoya Univ.)

- 27pPS-8 Strain sensor application of FeSiBNb film showing large Barkhausen jump
 °K. Maeno¹, Y. Kutsuna¹, M. Yanagida¹, Y. Fujiwara¹, M. Jimbo¹, D. Oshima², T. Kato² (¹Mie Univ., ²Nagoya Univ.)
- 27pPS-9 Magnetic properties and mechanical characteristic of Fe-Pt thin-sheets prepared by exfoliation behavior
 °Y. Miyahara¹, A. Yamashita¹, T. Yanai¹, H. Fukunaga¹, M. Nakano¹, C. Qi², T. Shinshi² (¹Nagasaki Univ., ²Tokyo Inst. Tech.)
- 27pPS-10 Electromagnetic levitation for flexible steel plate using magnetic field from horizontal direction (Experimental investigation on control system considering two-degree-of freedom model)
 °S. Onitsuka¹, A. Endo¹, J. Kuroda², D. Uchino², K. Ogawa³, K. Ikeda⁴, T. Kato⁵, T. Narita², H. Kato²
 (¹FIT, ²Tokai Univ., ³AUT, ⁴Hokkaido Univ. Sci., ⁵TUT)
- 27pPS-11 Development of Electromagnetic Guideway System for Seamless Ultra-Thin Steel Plate (Fundamental Consideration on Control Model in Edge and Out-of-Plane Direction)
 °T. Okubo¹, R. Kano¹, J. Kuroda¹, D. Uchino¹, K. Ogawa², K. Ikeda³, T. Kato⁴, A. Endo⁵, T. Narita¹, H. Kato¹
 (¹Tokai Univ., ²AUT, ³Hokkaido Univ. Sci., ⁴Tokyo Univ. Tech., ⁵FIT)
- 27pPS-12 Non-contact Guidance of Continuous Steel Plates Using Electromagnets (Experimental Consideration on Effect of Vibration Suppression with Electromagnet Position)
 °R. Kano¹, T. Okubo¹, J. Kuroda¹, D. Uchino¹, K. Ogawa², K. Ikeda³, T. Kato⁴, A. Endo⁵, H. Kato¹, T. Narita¹
 (¹Tokai Univ., ²Aichi Univ. Tech., ³Hokkaido Univ. Sci., ⁴Tokyo Univ. Tech., ⁵FIT)
- 27pPS-13 Ultra-compact mobility with driver comfort in mind Active seat suspension (Experimental investigation of occupant's biometric information when vibration is input)
 °S. Kasamatsu¹, M. Ochiai¹, I. Kobayashi¹, D. Uchino¹, J. Kuroda¹, A. Endo², K. Ikeda³, T. Kato⁴, K. Ogawa⁵, T. Narita¹,
 H. Kato¹ (¹Tokai Univ., ²FIT, ³Hokkaido Univ. of Sci., ⁴Tokyo Univ. of Tech., ⁵AUT)
- 27pPS-14 Anomalous Nernst effects in TbCo and GdCo alloys for heat flux sensing
 °M. Odagiri, H. Imaeda, S. Sumi, H. Awano, K. Tanabe (Toyota Tech. Inst.)
- 27pPS-15 Impedance change ratio of thin-film MI element at GHz range
 °Y. Tanaka, M. Tanii, H. Kikuti (Iwate Univ.)
- 27pPS-16 Analysis of the origin of magnetic moments in (Fe₇₅Co₂₅)_x-Ir_{1-x} composition gradient alloy with high saturation magnetization using magnetic circular dichroism (MCD)
 °T. Kawasaki¹, T. Yamazaki¹, A. L. Foggia², K. Fuku¹, R. Toyama², K. K. Varun², Y. Sakuraba², Y. Iwasaki², Y. Kotani³,
 T. Ohkochi³, K. Higashi³, N. Kawamura³, M. Kotsugi¹ (¹Tokyo Univ. Sci., ²NIMS, ³JASRI/SPring-8)
- 27pPS-17 Investigation of drying technique for PEGylated iron oxide nanoparticles using the Micro Powder Dry method.
 °N. Kota¹, S. Seino¹, M. Tanabe¹, T. Konoo¹, S. Uematsu^{1,2}, T. Nakagawa¹ (¹Osaka Univ., ²ULVAC)
- 27pPS-18 Synthesis of oleic acid-stabilized iron oxide nanoparticles by thermal decomposition
 °S. Yamashita, R. Miura, H. Takimoto, S. Seino, T. Nakagawa (Osaka Univ.)
- 27pPS-19 Exploration of silane coupling treatment conditions for oleic acid-stabilized iron oxide nanoparticles
 °H. Takimoto, R. Miura, S. Yamashita, S. Seino, T. Nakagawa (Osaka Univ.)
- 27pPS-20 Study on Signal Processing of Magnetic Particle Imaging System with Parallel DC AC Magnetic Field
 °M. Iizuka, A. Furukawa, S. Seino, T. Nakagawa (Osaka Univ.)
- 27pPS-21 Effect of Carbon Substitution into Oxide Grain Boundaries on Magnetic Properties and Microstructure of FePt Granular Thin Films
 °K. Tham¹, R. Kushibiki¹, S. Saito² (¹TANAKA, ²Tohoku Univ.)
- 27pPS-22 Evaluation of blocking phenomenon for L1₀ typed FePt granular films by using temperature hysteresis
 °D. Isurugi¹, T. Saito¹, S. Kaneko¹, K. Tham², T. Ogawa¹, S. Saito¹ (¹Tohoku Univ., ²TANAKA)

Sep. 28/Room A

Symposium "Advanced local probe techniques in nanoscaled magnetism"

Chief Organizer: N. Kikuchi (Tohoku Univ.), J. Okabayashi (Univ. of Tokyo)

9:00 ~ 10:30

Chair: N. Kikuchi (Tohoku Univ.)

- 28aA-1 Nanoscaled magnetism probed by synchrotron-radiation spectromicroscopy
 °T. Ueno (QST)
- 28aA-2 Atomic-scale surface and interface magnetism based on ferromagnetic monatomic layer iron nitride
 °T. Miyamachi (Nagoya Univ.)

- 28aA-3 Automated interpretation of magnetic domain structure using feature extended Landau free energy model
°M. Kotsugi (Tokyo Univ. Sci.)
- 10:45 ~ 12:15** Chair: J. Okabayashi (Univ. of Tokyo)
- 28aA-4 Interfacial Imaging on Magnetic Junctions by Electron Microscopy
°A. Hirohata^{1,2}, K. Elphick¹, D. C. Lloyd¹, S. Mizukami² (¹Univ. of York, ²Tohoku Univ.)
- 28aA-5 Nanostructure characterization of magnetic materials by SEM/TEM/APT
°T. Sasaki, J. Uzuhashi, T. Ohkubo (NIMS)
- 28aA-6 Voltage-control of magnetization dynamics by using topological insulators
°T. Komine¹, T. Chiba² (¹Ibaraki Univ., ²Tohoku Univ.)

Sep. 28/Room B

- Anomalous Nernst effect I** **9:00 ~ 9:45** Chair: Y. Sakuraba (NIMS)
- 28aB-1 Anomalous Nernst effect of SnSe thin films doped with magnetic elements
°K. Wada, T. Miyamachi, M. Mizuguchi (Nagoya Univ.)
- 28aB-2 Electric field control of anomalous Nernst effect in FePt thin films
°S. Yoshida, T. Miyamachi, M. Mizuguchi (Nagoya Univ.)
- 28aB-3 Figure of merit for transverse thermoelectric conversion in Fe/Pt metallic superlattices
°T. Yamazaki¹, T. Hirai², T. Yagi³, K. Uchida^{1,2}, T. Seki^{1,2}, K. Takanashi^{1,4} (¹Tohoku Univ., ²NIMS, ³AIST, ⁴JAEA)

- Anomalous Nernst effect II** **10:00 ~ 11:00** Chair: T. Hirai (NIMS)
- 28aB-4 Composition dependence of thermoelectric tensor in amorphous TbFeCo magnetic thin films
°T. Komine¹, R. Ando² (¹Ibaraki Univ., ²NIT, Ibaraki Coll.)
- 28aB-5 Anomalous Nernst voltage in GdFeCo ferrimagnetic multilayer thin film
°Y. Kobayashi, F. Kitazawa, Y. Kasatani, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 28aB-6 Unraveling spin-polarized band dispersions of Fe₃Ga thin films exhibiting a giant anomalous Nernst effect
K. Ohwada¹, K. Nakanishi¹, K. Kuroda¹, K. Miyamoto¹, T. Okuda¹, W. Zhou², S. Isogami², K. Masuda², Y. Sakuraba², °
A. Kimura¹ (¹Hiroshima Univ., ²NIMS)
- 28aB-7 Anomalous Nernst effect in Ge-doped Co thin films
°T. Tsujimoto¹, T. Fujita², T. Miyamachi¹, S. Ueda³, M. Mizuguchi¹ (¹Nagoya Univ., ²Kochi Univ. Tech., ³NIMS)

Sep. 28/Room C

- Magnetic recording** **10:45 ~ 12:00** Chair: I. Suzuki(WD)
- 28aC-1 Printing characteristics of burst signals by using double magnet mater media
°T. Komine (Ibaraki Univ.)
- 28aC-2 Magnetization state of FePt fine particles formed from micro Pt / Fe thin films
°Y. Shimizu, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 28aC-3 Energy barrier height for microwave assisted switching
S. Mizutani, °N. Kikuchi, M. Hatayama, T. Shimatsu, S. Okamoto (Tohoku Univ.)
- 28aC-4 Design direction of oxide in CoPt granular thin film for perpendicular recording media
°M. Saito, H. Ohashi, A. Hashimoto (Resonac)
- 28aC-5 Mitigation method of mode hopping effect on NFT protrusion measurement
°A. Sakoguchi, M. Furukawa, S. Nishida, R. Nishikura, K. Tasaka (Western Digital Technologies GK)

Sep. 28/Room D

- Surface magnetism and interface magnetism** **9:00 ~ 10:45** Chair: K. Toyoki (Osaka Univ.)
- 28aD-1 Stripe structures in Mn films on Fe(110)
°T. Yamada¹, E. Inami², P. Krueger¹ (¹Chiba Univ., ²Kochi Univ. Tech.)
- 28aD-2 Demonstration of magnetic compensation of Cu-doped Mn₄N thin films at room temperature by composition modulation
°A. Hatate¹, K. Amemiya², K. Toko¹, T. Suemasu¹ (¹Univ. of Tsukuba, ²KEK)

- 28aD-3 Antiferromagnetic domain formation and spin frustration in ultrathin Cr(001) film
 °T. Kawagoe¹, S. Suga² (¹Osaka Kyoiku Univ., ²Osaka Univ.)
- 28aD-4 Co substitution effect on the amount of magnetization near the magnetic interface in GdFe-based ferrimagnetic thin films
 °F. Kitazawa, Y. Sou, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 28aD-5 Film thickness dependence of anomalous Hall resistance and longitudinal resistance of GdFe thin films at different temperatures
 °Y. Sou, F. Kitazawa, Y. Kobayashi, Y. Kasatani, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 28aD-6 Correlation between roughness and magnetic coupling at CoPc/ γ' -Fe₄N organic-inorganic hybrid interface
 °H. Ono¹, Y. Umeda¹, K. Yoshida¹, K. Tsutsui¹, K. Yamamoto², O. Ishiyama², T. Yokoyama², M. Mizuguchi¹, T. Miyamachi¹
 (¹Nagoya Univ., ²IMS)
- 28aD-7 Interfacial magnetic coupling in C₇₀-based organic-inorganic hybrid thin films
 °K. Yoshida¹, H. Ono¹, Y. Umeda¹, K. Tsutsui¹, K. Yamamoto³, O. Ishiyama³, Y. Matsuo¹, T. Yokoyama³, M. Mizuguchi^{1,2},
 T. Miyamachi^{1,2} (¹Nagoya Univ., ²IMA^{SS}, ³IMS)

Sep. 28/Room E

- Motor** **9:00 ~ 10:30** Chair: K. Ishiyama (Tohoku Univ.)
- 28aE-1 Experimental Verification of Loss Dependence on Torque and Speed in Flux-modulated-type Magnetic Gear
 °E. Asahina, K. Nakamura (Tohoku Univ.)
- 28aE-2 Basic Examination of Instantaneous Torque Control for High-speed SR Motor
 °A. Okada, K. Nakamura (Tohoku Univ.)
- 28aE-3 Flux Barrier Shape for Reluctance Torque Improvement of Distributed-Winding Interior Permanent Magnet Motor
 °K. Tamura¹, K. Nakamura¹, K. Naruse², M. Kayano² (¹Tohoku Univ., ²Aichi Steel)
- 28aE-4 Magnet Arrangement of Concentrated-Winding Interior Permanent Magnet Motor with Nd-Fe-B and Ferrite Magnets
 °T. Obana, K. Nakamura (Tohoku Univ.)
- 28aE-5 Drive Range Expansion of In-Wheel Axial-Flux SR Motor for Compact EV
 °Y. Nishigai, K. Nakazawa, K. Nakamura (Tohoku Univ.)
- 28aE-6 Examination of Air Gap Flux Density Waveforms of Flux-Modulated-type Magnetic Gear
 °A. Okazaki¹, T. Sumi¹, K. Nakamura¹, T. Shinji², K. Takeda² (¹Tohoku Univ., ²TDK)

- Inductor • Converter • Modeling** **10:45 ~ 11:45** Chair: K. Fujisaki (Toyota Tech. Inst.)
- 28aE-7 Calculation for Output Characteristic of Motor Structure with Boost Reactor Function Based on RNA
 °L. Zhang, Y. Yoshida, S. Sakurai, N. Handa, K. Tajima (Akita Univ.)
- 28aE-8 A Study on High Torque IPMSM Using Sm-Fe-N Bonded Magnet
 °K. Takeda¹, Y. Yoshida¹, R. Yoshida², M. Abe², S. Tada², M. Yamamoto², K. Tajima¹ (¹Akita Univ., ²NICHIA)
- 28aE-9 Design and Analysis of 3 kVA Orthogonal-Core-type Variable Inductor with Permanent Magnets
 °S. Aizu¹, K. Nakamura¹, T. Ohinata², K. Arimatsu² (¹Tohoku Univ., ²Tohoku Electric Power)
- 28aE-10 Fabrication of LLC-L resonant DC-DC converter using Fe-based composite magnetic core leakage transformer
 °R. Miyata, K. Yoda, T. Minamisawa, M. Sonehara, T. Sato (Shinshu Univ.)

Sep. 28/Poster Room

Poster session II (Spintronics, Thin Films, Fine Particles, Multilayers, and Superlattices)

- 10:15 ~ 12:30** Chair: T. Hajiri(muRata)
- 28aPS-1 MgO barrier layer thickness dependence of electrical 1/f noise in magnetic tunnel junctions
 °Y. Wang¹, M. Al-Mahdawi², Z. Jin³, M. Oogane^{1,2} (¹Tohoku Univ., ²CSIS, ³CAS)
- 28aPS-2 Non-local spin transport measurement in ferrimagnetic GdCo thin films
 °T. Ito¹, S. Funada¹, K. Kuwano¹, I. Sugiura¹, Y. Shiota¹, T. Moriyama², T. Ono¹ (¹Kyoto Univ., ²Nagoya Univ.)
- 28aPS-3 Structural analysis and magnetic properties of Co₂FeAl_{0.5}Si_{0.5}/GeSn junction deposited by sputtering method
 °Y. Kawaharabayashi¹, M. Kuniyoshi², M. Takeuchi², R. Ishikawa² (¹Yamato Univ., ²ULVAC)

- 28aPS-4 Characterization of anomalous Hall effect and anomalous Nernst effect in $\text{Co}_2\text{Mn}(\text{Al,Ga})$ thin films
^oK. Sugawara, M. Yamanouchi, T. Uemura (Hokkaido Univ.)
- 28aPS-5 Sensitivity improvement of a heat flux sensor based on anomalous Nernst effect by uneven structure
^oH. Imaeda, M. Odagiri, M. Sakamoto, S. Sumi, H. Awano, K. Tanabe (Toyota Tech. Inst.)
- 28aPS-6 Phase transition of skyrmion by applying voltage
^oM. Kasagawa¹, S. Miki¹, K. Hashimoto¹, R. Ishikawa², M. Goto¹, H. Nomura¹, Y. Suzuki¹ (¹Osaka Univ., ²ULVAC)
- 28aPS-7 Numerical study on skyrmion transport with small size and high speed
^oR. Satone, Y. Kurokawa, H. Yuasa (Kyushu Univ.)
- 28aPS-8 Evaluation of information current between skyrmions
^oK. Emoto¹, H. Mori¹, R. Ishikawa², S. Miki^{1,3,4}, M. Goto^{1,3,4}, H. Nomura^{1,3,4}, E. Tamura^{1,3,4}, Y. Suzuki^{1,3,4}
(¹Osaka Univ., ²ULVAC, ³OTRI-Osaka, ⁴CSRN-Osaka)
- 28aPS-9 Proposal of Merge and Fork circuits using the Brownian motion of magnetic skyrmions by micromagnetic simulation
^oH. Imanishi¹, S. Miki^{1,2,3}, M. Goto^{1,2,3}, E. Tamura^{1,2,3}, H. Nomura^{1,2,3}, Y. Suzuki^{1,2,3}
(¹Osaka Univ., ²Osaka Univ. OTRI, ³Osaka Univ. CSRN)
- 28aPS-10 Fabrication of information input device by skyrmion
^oR. Ishikawa¹, M. Goto², H. Nomura², Y. Suzuki² (¹ULVAC, ²Osaka Univ.)
- 28aPS-11 Fabrication of epitaxial $\text{Cr}_2\text{O}_3(0001)$ thin film on $\text{LiNbO}_3(0001)$
^oY. Nakamura¹, K. Toyoki^{1,2,3}, R. Nakatani^{1,2,3}, Y. Shiratsuchi^{1,2,3} (¹Osaka Univ., ²OTRI, Osaka Univ., ³CSRN, Osaka Univ.)
- 28aPS-12 Growth of layered magnet prepared on ultrathin $\text{Mn}(001)$ films
^oH. Seki, T. Kashiwagi, T. Yamada (Chiba Univ.)
- 28aPS-13 Magnetic first-order reversal curves for concave Fe_3O_4 nanoparticles
^oH. Li, S. Matsuo, S. Kobayashi, R. Kawamura (Iwate Univ.)
- 28aPS-14 Magnetic properties and surface effects of hcp and fcc-CoO nanoparticles
^oT. Tachibana, Y. Hotta, K. Takahashi, C. Noda, S. Kobayashi (Iwate Univ.)
- 28aPS-15 Magnetic heating properties of hollow Fe_3O_4 particles with magnetic vortex structure
^oH. Akiyama¹, L. Tonthat¹, A. Kuwahata¹, S. Yabukami¹, S. Kobayashi² (¹Tohoku Univ., ²Iwate Univ.)
- 28aPS-16 Characterization of GdFe thin films with a concentration gradient in the perpendicular direction
^oJ. Mizuno, S. Sumi, H. Awano, K. Tanabe (Toyota Tech. Inst.)
- 28aPS-17 Fabrication of ferromagnetic high-entropy alloys thin films and evaluation of magneto-transport properties
^oK. Suzuki^{1,2}, K. Takanashi^{1,2} (¹JAEA, ²Tohoku Univ.)
- 28aPS-18 Fabrication of epitaxial $\text{MgAl}_2\text{O}_4/\text{Li}_0\text{-FePt}(001)$ stacks for perpendicular magnetic tunnel junctions
^oT. Kanazawa^{1,2}, T. Scheike¹, J. Uzuhashi¹, T. Ohkubo¹, H. Sukegawa¹, S. Mitani^{1,2}, H. Yanagihara²
(¹NIMS, ²Univ. of Tsukuba)
- 28aPS-19 Anomalous ferromagnetic damping in [Co/Ni] multilayer/Pt/Fe heterostructures
^oT. Izumi¹, Y. Hisada¹, S. Komori¹, K. Imura², T. Taniyama¹ (¹Dept. Phys., Nagoya Univ., ²ILAS, Nagoya Univ.)
- 28aPS-20 Node-state detection method for magnetic nanowire reservoir
^oT. Maeda¹, K. Hon¹, H. Kubota², M. Goto^{1,3,4}, Y. Suzuki^{1,3,4}, H. Nomura^{1,3,4,5}
(¹Osaka Univ., ²AIST, ³CSRN Osaka, ⁴OTRI -Osaka, ⁵Tohoku Univ.)
- 28aPS-21 Real-Time detection of 500 m/s high-speed Domain Wall Motion using Laser
^oN. Suzuki, K. Wainai, K. Nomura, M. Mohammadi, S. Sumi, K. Tanabe, H. Awano (Toyota Tech. Inst.)
- 28aPS-22 Preparation of magnetic films by LIFT technique
^oI. Fukuda, K. Higashi, G. Tahara, A. Yamashita, T. Yanai, H. Fukunaga, M. Nakano (Nagasaki Univ.)
- 28aPS-23 Estimation of magnetic anisotropy from a magnetic domain image in TbCo alloy films using machine learning
^oA. Watanabe, S. Kuno, H. Awano, K. Tanabe (Toyota Tech. Inst.)

Sep. 28/Fellow Lecture Room (Osaka University Hall)

- | | | |
|--|----------------------|---|
| Fellow lecture | 13:00 ~ 14:30 | Chair: M. Mizuguchi (Nagoya Univ.) |
| 28FL-1 Nanostructure and Magnetic Materials | | ^o K. Hono (NIMS) |
| 28FL-2 Pioneering of spintronic functions of non-metallic materials and its control by external fields | | ^o M. Shiraishi (Kyoto Univ.) |

28FL-3 Development of new-functional spintronic devices and its application to innovative information processing
°S. Fukami (Tohoku Univ., InaRIS)

Sep. 29/Room A

Symposium "Fusion of mechanics and spintronics"

Chief Organizer: H. Tanigawa (SCK)

9:00 ~ 10:30

Chair: K. Yamada (Gifu Univ.)

29aA-1 Spintronics applications of gyromagnetic effect

°Y. Nozaki (Keio Univ., Keio CSRN)

29aA-2 Theory of acoustic gyromagnetic effect

°M. Matsuo (Univ. Chinese)

10:45 ~ 12:15

Chair: K. Yamada (Gifu Univ.)

29aA-3 Acoustic phonon induced spin dynamics

°M. Hayashi (Univ. of Tokyo)

29aA-4 Hydrodynamic Generation mediated by Spin Current

°R. Takahashi (Ochanomizu Univ.)

13:15 ~ 15:30

Chair: H. Tanigawa (SCK)

29pA-1 Magneto-mechanical micro devices

°T. Ono (Tohoku Univ.)

29pA-2 Spin Elastronics —Mechanical sensing using spintronics devices—

°D. Chiba (Osaka Univ., Tohoku Univ.)

29pA-3 Active and selective temperature control using mechanical strain

°T. Hirai (NIMS)

Sep. 29/Room B

Granular films and nano particles

9:00 ~ 10:30

Chair: H. Yanagihara (Tsukuba Univ.)

29aB-1 Effect of Fe content on FeCo-MgF₂ granular films prepared by co-evaporation.

°M. Miyamoto¹, T. Kubo¹, S. Sue^{1,2}, M. Sonehara², T. Sato² (¹CITIZEN FINEDEVICE, ²Shinshu Univ.)

29aB-2 Fabrication of nanogranular bulky materials and their electromagnetic properties

°N. Kobayashi, T. Iwasa, K. Ikeda, M. Naoe, K. Arai (DENJIKEN)

29aB-3 Magneto-optical effect in Co-BaF/BaF multilayer nanogranular films

°K. Ikeda, N. Kobayashi, K. Arai (DENJIKEN)

29aB-4 Fabrication of Fe-Fe₃O₄ co-aggregated nanoparticles assembly and their AC magnetic property

°S. Yanagita^{1,2}, Y. Yamaguchi¹, N. Kosaka¹, Y. Sotome¹, C. McNamee³, S. Yamamoto², S. Saito¹, T. Ogawa¹
(¹Tohoku Univ., ²Sankei Giken Kogyo Co., Ltd., ³Shinshu Univ.)

29aB-5 Synthesis of Co-Pt nanoparticles in isolated spherical shell protein PfV

°K. Tagata¹, R. Tominaga¹, A. Higashiura², R. Nakatani¹, A. Nakagawa¹, Y. Shiratsuchi¹ (¹Osaka Univ., ²Hiroshima Univ.)

29aB-6 Preparation of epoxy-coated Fe-B /Epoxy composite film by LbL method assisted composite plating

°C. Masumoto¹, T. Nishii², S. Higashi², H. Muto³, Y. Endo¹, N. Fujita²
(¹Tohoku Univ., ²NIT, Nara Coll., ³Toyohashi Univ. Tech.)

Spin orbit torque

10:45 ~ 12:30

Chair: S. Karube (Kyoto Univ.)

29aB-7 Self-induced spin-orbit torque induced by the spin Hall effect in ferromagnets

°M. Aoki^{1,2}, E. Shigematsu¹, R. Ohshima^{1,2}, S. Teruya^{1,2}, M. Shiraishi^{1,2}, Y. Ando^{1,2,3}
(¹Kyoto Univ., ²CSRN Kyoto Univ., ³PRESTO, JST)

29aB-8 Spin Orbit Torque Magnetization Switching of Tb/Gd/FeCo Multilayers deposited on Ta layer

°Y. Fujita¹, D. Oshima¹, S. Takahashi², Y. Hirayama², T. Kato¹ (¹Nagoya Univ., ²Samsung Research Inst. Jpn.)

29aB-9 A modulation of spin pumping due to ferromagnetic to antiferromagnetic phase transition in single crystalline Dy film

°K. Yamanoi, Y. Nozaki (Keio Univ.)

- 29aB-10 Effect of an ultrathin Fe interlayer on the growth of MnGa and spin-orbit-torque induced magnetization switching
 °M. Ogawa, T. Hara, S. Hasebe, M. Yamanouchi, T. Uemura (Hokkaido Univ.)
- 29aB-11 Spin transfer torque assisted spin orbit torque switching of CPP-GMR with perpendicularly magnetized Co/Pd memory layer
 °D. Pan, Z. Cao, D. Oshima, T. Kato (Nagoya Univ.)
- 29aB-12 Thermal spin-transfer torque assisted all-optical switching in L1₀-ordered FePt thin films
 °J. Wang¹, Z. Wen², Y. Sasaki², Y. Takahashi², K. Uchida², K. Takagi¹, K. Ozaki¹ (¹AIST, ²NIMS)
- 29aB-13 Frequency characteristics of emergent electromagnetic response in magnetic nanostructures
 °Jun'ichi Ieda¹, Y. Araki¹, Y. Yamane² (¹JAEA, ²Tohoku Univ.)

TMR, GMR, AMR I

13:30 ~ 14:30

Chair: H. Sukegawa (NIMS)

- 29pB-1 Anisotropic magnetoresistance effect in Fe_{4-x}Ni_xN films grown by molecular beam epitaxy
 °W. Yin, K. Ito, T. Tanaka, R. Y. Umetsu (Tohoku Univ.)
- 29pB-2 Temperature dependence of anisotropic magnetoresistance effect considering crystal orientation of Co-based Heusler bulk-single crystals
 °T. Tanaka¹, T. Kubota¹, S. Kokado², R. Y. Umetsu¹ (¹Tohoku Univ., ²Shizuoka Univ.)
- 29pB-3 Quantum-annealing approach for designing cation-disordered spinels for magnetic tunnel junctions
 °K. Nawa^{1,2}, T. Suzuki³, K. Masuda², S. Tanaka^{4,5}, Y. Miura^{2,6}
 (¹Mie Univ., ²NIMS, ³TDK, ⁴Keio Univ., ⁵WPI-Bio2Q, Keio Univ., ⁶CSRN, Osaka Univ.)
- 29pB-4 Tunnel magnetoresistance effect of magnetic tunnel junctions using perpendicularly magnetized conductive cobalt ferrite electrodes
 °M. Tanaka¹, T. Ichikawa¹, D. Mashimo¹, M. Morishita¹, H. Komiyama², S. Honda³, T. Ono², K. Mibu¹
 (¹Nagoya Inst. Tech., ²Kyoto Univ., ³Kansai Univ.)

TMR, GMR, AMR II

14:45 ~ 15:45

Chair: K. Nawa (Mie Univ.)

- 29pB-5 Theoretical study for (111)-oriented magnetic tunnel junctions with SrTiO₃ barriers
 °K. Masuda¹, H. Itoh², Y. Sonobe³, H. Sukegawa¹, S. Mitani¹, Y. Miura¹ (¹NIMS, ²Kansai Univ., ³Waseda Univ.)
- 29pB-6 Dependence of magnetic tunneling properties of Fe₃O₄-MTJs on barrier material
 °K. Yoshino¹, S. Yasui¹, S. Yokokura¹, T. Shimada¹, T. Nagahama² (¹Hokkaido Univ., ²Yamaguchi Univ.)
- 29pB-7 CoFe/MgO/CoFe(001) magnetic tunnel junctions with giant tunnel magnetoresistance exceeding 630% at room temperature
 °T. Scheike, Z. Wen, H. Sukegawa, S. Mitani (NIMS)
- 29pB-8 Fabrication and analyzation of magnetoresistance device with composition spread layer for optimization of interfacial electronic band matching
 V. K. Kushwaha, R. Toyama, Y. Miura, Y. Iwasaki, °Y. Sakuraba (NIMS)

Sep. 29/Room C

Magnetic powder core

9:00 ~ 10:15

Chair: H. Nakayama (Nagano Nat. Coll. Tech.)

- 29aC-1 Low temperature formation of oxide film on Fe-based micron particles synthesized from magnetite by gas-solid reaction
 °M. Miyazawa, T. Ogawa, M. Tobise, S. Saito (Tohoku Univ.)
- 29aC-2 Correlation between iron loss and features of *B-H* curves of dust cores under the application of dc bias field
 °T. Onuma¹, N. Ono¹, S. Okamoto^{1,2} (¹IMRAM, Tohoku Univ., ²CSIS, Tohoku Univ.)
- 29aC-3 Study on magnetic properties of toroidal cores composed of electrolytic iron powders with different shapes
 °Y. Kodama, P. Nguyen, T. Miyazaki, S. Muroga, Y. Endo (Tohoku Univ.)
- 29aC-4 Iron loss analyses of toroidal cores of various materials based on magnetization reversal processes
 °N. Ono¹, Y. Uehara², Y. Endo^{3,4}, S. Yoshida¹, H. Oikawa⁵, N. Kikuchi¹, S. Okamoto^{1,4,6}
 (¹IMRAM, ²Magnetic Device Laboratory, ³Graduate School of Eng. Tohoku Univ., ⁴CSIS, Tohoku Univ., ⁵TOKIN, ⁶NIMS)
- 29aC-5 Modification of transformer coupled permeameter for measuring a soft magnetic particle targeting power electronics applications
 °S. Tamaru (AIST)

Amorphous • Nanocrystal **10:30 ~ 11:45** Chair: S. Saito (Tohoku Univ.)

- 29aC-6 In-plane anisotropic CoFeNi-MgF₂ nanogranular films having low anisotropy field for high permeability at VHF band
°M. Naoe¹, M. Sonehara², K. Miayaji², T. Sato², S. Muroga³, Y. Endo³, N. Kobayashi¹, K. Arai¹
(¹DENJIKEN, ²Shinshu Univ., ³Tohoku Univ.)
- 29aC-7 The structure and magnetic properties of submicron Fe-Ni-B amorphous particles
°K. Wakabayashi, T. Miyazaki, S. Muroga, Y. Endo (Tohoku Univ.)
- 29aC-8 Novel FeCo based FeCoBPSiCr Amorphous Alloy Powder with High B_s of 1.61 T and High Corrosion Resistance
°Y. Kajiura, A. Hasegawa, M. Hosono, K. Yoshidome, S. Otsuka, H. Ohkubo, H. Matsumoto (TDK)
- 29aC-9 Development of spherical iron-based amorphous fine particles
°R. Tsushiro¹, Y. Endo² (¹TODA KOGYO, ²Tohoku Univ.)
- 29aC-10 Speeding up of Micromagnetic Simulation for Nanocrystalline Soft Magnetic Material by Implicit Method
°T. Tanaka, T. Ataka, M. Kazama (Fujitsu)

NdFeB • Ferrite **12:45 ~ 14:30** Chair: T. Hasegawa (Akita Univ.)

- 29pC-1 Feature extraction of FORC diagrams of Nd-Fe-B sintered magnets with different temperatures, Dy doping, and alignment
°K. Ishigami¹, K. Nabeta¹, D. Furusawa², T. Maki², T. Nishiuchi², T. Nakamura¹, S. Okamoto^{1,3}
(¹Tohoku Univ., ²Proterial, ³NIMS)
- 29pC-2 Measurement of FORC diagram for Nd-Fe-B having different alignment degree and Dy compositions
°K. Nabeta¹, K. Ishigami¹, D. Furusawa², T. Maki², T. Nishiuchi², S. Okamoto^{1,3} (¹Tohoku Univ., ²Proterial, ³NIMS)
- 29pC-3 Feature extraction of 3D microstructure and magnetic domain in a Tb diffused Nd-Fe-B sintered magnet
°T. Suwa¹, K. Ishigami¹, M. Suzuki², S. Okamoto¹ (¹Tohoku Univ., ²Kwansei Gakuin Univ.)
- 29pC-4 Site selectivity of Co in La-Co co-substituted M-type ferrites: DFT calculation study
°T. Waki¹, H. Ohta², H. Ikeno³, Y. Tabata¹, H. Nakamura¹ (¹Kyoto Univ., ²Doshisha Univ., ³Osaka Metropolitan Univ.)
- 29pC-5 Evaluation of magnetic properties of La-(Co, Zn) substituted M-type Sr ferrite
°S. Nakai, R. Sobajima, T. Waki, Y. Tabata, H. Nakamura (Kyoto Univ.)
- 29pC-6 Change of coercivity by heat treatment in La-Co co-substituted M-type Sr ferrite
°T. Wakabayashi, T. Waki, Y. Tabata, H. Nakamura (Kyoto Univ.)
- 29pC-7 Fabrication of La-Co-Sr ferrite particles using molten potassium bromide flux
°C. Kodaka, M. Kishimoto, E. Kita, H. Yanagihara (Univ. of Tsukuba)

New materials **14:45 ~ 16:15** Chair: S. Okamoto (Tohoku Univ.)

- 29pC-8 bct Fe-Co-V-N foils fabricated by rolling and ammonia-nitriding method
°T. Hasegawa (Akita Univ.)
- 29pC-9 Lattice distortion of V element and bct Fe-Co-V films
°C. Murakami, T. Hasegawa (Akita Univ.)
- 29pC-10 Microfabrication and magnetic properties of tetragonally distorted Fe-Co-V films
°K. Enomoto, T. Hasegawa (Akita Univ.)
- 29pC-11 Granularization and magnetic properties of FeCo-based alloy films with added Ag
°K. Kunigida, T. Hasegawa (Akita Univ.)
- 29pC-12 High Throughput synthesis of TbCu₇ type Sm-Fe based thin films
°D. Angayarkanni Ramamurthy^{1,2}, D. Ogawa², H. Sepehri Amin^{1,2}, R. Modak², V. Kushwaha², Y. Sakuraba^{1,2}, K. Uchida^{1,2},
K. Hono^{1,2}, Y. Takahashi² (¹Univ. of Tsukuba, ²NIMS)
- 29pC-13 An exploration of tetragonal inverse Heusler alloys with high magnetization and high magnetic anisotropy
°Z. Qiao, M. Tsujikawa, M. Shirai (Tohoku Univ.)

Sep. 29/Room D

Observation of magnetic domain and magnetic domain wall

9:00 ~ 10:00

Chair: H. Mamiya (NIMS)

- 29aD-1 Time-resolved vector domain observation of soft magnetic ribbons
°T. Ogasawara¹, S. Tamaru¹, S. Okamoto² (¹AIST, ²Tohoku Univ.)

- 29aD-2 Magnetic Domain Observation by Polarization Angle Detection Using a 16-bit Polarization Camera
°S. Meguro¹, S. Saito² (¹NEOARK, ²Tohoku Univ.)
- 29aD-3 Improvement of complete domain expansion ratio for spatial light modulator driven by current-induced domain wall motion
°M. Kawana, R. Higashida, K. Aoshima, N. Funabashi (NHK)
- 29aD-4 Magnetic domain structure of amorphous magnetic wires for GSR sensors
°S. Tuneto¹, M. Takezawa¹, Y. Honkura², S. Hnkura² (¹Kyushu Inst. Tech., ²Magnedesign)

Magnetooptics, Spectroscopic imaging, Magnetostriction

10:15 ~ 11:30

Chair: T. Ogasawara (AIST)

- 29aD-5 Simultaneous measurement of longitudinal and transverse Kerr images using polarization camera
°T. Ishibashi¹, I. Wakamatsu², T. Taniyama² (¹Nagaoka Univ. Tech., ²Nagoya Univ.)
- 29aD-6 Development of magneto-optical diffractive deep neural network device
°T. Ishibashi¹, H. Sakaguchi¹, T. Fujita¹, J. Zhang¹, F. Chafi¹, H. Nonaka², S. Sumi³, H. Awano³
(¹Nagaoka Univ. Tech., ²Aichi Inst. Tech., ³Toyota Tech. Inst.)
- 29aD-7 Neutron transmission imaging on magnetic materials/devices
°H. Mamiya¹, Y. Oba², N. Terada¹, H. Kosuke³, T. Shinohara³ (¹NIMS, ²Toyohashi Univ. Tech., ³JAEA)
- 29aD-8 Frequency response of magnetostriction in Magnetics Alloy Ribbons
°O. Mori¹, S. Sato¹, R. Utsumi¹, Y. Endo² (¹Toei Scientific Industrial, ²Tohoku Univ.)
- 29aD-9 Novel Magneto-optical Kerr Effect Measurement System for Perpendicular Magnetic Anisotropy Films in STT-MRAM
°K. Ozawa¹, K. Suzuki¹, S. Ueyama¹, J. Kim², W. Kim², I. Kim² (¹Samsung Japan, ²Samsung Electronics)

Magnetic sensor I

13:00 ~ 14:00

Chair: T. Uchiyama (Nagoya Univ.)

- 29pD-1 Fundamental properties of domain wall displacement GMR sensors with closed loop operation
°K. Komuro, D. Oshima, T. Kato (Nagoya Univ.)
- 29pD-2 Tunnel magnetoresistive sensors exhibiting highly symmetric resistance-magnetic field response
°T. Nakatani, H. Iwasaki (NIMS)
- 29pD-3 MFC Gain of High-Sensitive GMR Sensor Used for a Magnetic Field Microscope
°A. Kikitsu¹, Y. Higashi¹, Y. Kurosaki¹, S. Shirotori¹, K. Suzuki², Y. Terui² (¹Toshiba, ²Toshiba Nanoanalysis)
- 29pD-4 Enhancing Leaked Magnetic Field Measurement with Thin Film Magnetic Field Sensor
°L. Tonthat¹, R. Suzuki¹, J. Honda¹, K. Okita¹, J. Chakrothai², K. Fujii², S. Yabukami¹
(¹Tohoku Univ., ²National Institute Of Information And Communications Technology)

Magnetic sensor II

14:15 ~ 15:15

Chair: T. Kato (Nagoya Univ.)

- 29pD-5 Evaluating characteristics of orthogonal fluxgate strain sensor
°K. Chida, T. Goto, K. Ishiyama (Tohoku Univ.)
- 29pD-6 Vehicle Detection Device Using 2-Axis Magneto-Impedance Sensors for Traffic Monitoring
°R. Yao, T. Uchiyama (Nagoya Univ.)
- 29pD-7 Evaluation of Dynamic Range Enhancement Effects through Single-Coil Feedback
S. Idachi, °T. Uchiyama (Nagoya Univ.)
- 29pD-8 Pulse voltage of Wiegand wire depending on positions of excitation and detection
°H. Suzuki, Y. Takemura (Yokohama National Univ.)

Sep. 29/Room E

Magnetostrictive power generation

9:00 ~ 11:00

Chair: S. Fujieda (Osaka Univ.)

- 29aE-1 New Vibration Powered Generator: Perpendicular Magnetic Field Assisted Electromagnetic Vibration Powered Generator
°M. Ohtake, Y. Nakamura, E. Ishikawa, T. Kawai, M. Futamoto (Yokohama National Univ.)
- 29aE-2 Effect of Beam Shape on the Shock-Induced Output Characteristics of Perpendicular Magnetic Field Assisted and Inverse Magnetostrictive Electromagnetic Vibration Powered Generators
°S. Kamiya, E. Ishikawa, S. Aketa, Y. Nakamura, M. Ohtake, T. Kawai, M. Futamoto (Yokohama National Univ.)

- 29aE-3 Analysis of Magnetic Flux Variation Behavior in Magnetic Beams of Perpendicular Magnetic Field Assisted and Inverse Magnetostrictive Electromagnetic Vibration Powered Generators
 °E. Ishikawa, M. Ohtake, Y. Nakamura, T. Kawai, M. Futamoto (Yokohama National Univ.)
- 29aE-4 Quality Factor of Power Generation Coil on the Vibration Power Generation using Magnetostriction Material
 °T. Kawai, E. Ishikawa, Y. Nakamura, M. Ohtake, M. Futamoto (Yokohama National Univ.)
- 29aE-5 Application of Electroplated Fe-Co Alloy Thick Film to Magnetic Beam Material in Perpendicular Magnetic Field Assisted and Inverse Magnetostrictive Electromagnetic Vibration Powered Generators
 °Y. Nakamura¹, S. Aketa¹, M. Ohtake¹, H. Kamogawa², T. Kawai¹, M. Futamoto¹
 (¹Yokohama National Univ., ²Kanto Kasei Co., Ltd.)
- 29aE-6 Application of Electroplated Ni-Fe Alloy Thick Film to Magnetic Beam Material in Perpendicular Magnetic Field Assisted and Inverse Magnetostrictive Electromagnetic Vibration Powered Generators
 °S. Aketa¹, Y. Nakamura¹, M. Ohtake¹, H. Kamogawa², T. Kawai¹, M. Futamoto¹
 (¹Yokohama National Univ., ²Kanto Kasei Co., Ltd.)
- 29aE-7 Vibration energy harvesting using composite amorphous ribbon
 °T. Kamikura, T. Goto, K. Ishiyama (Tohoku Univ.)
- 29aE-8 Study on Development of Negative Magnetostrictive Soft Magnetic Material for Bimorph Vibration Power Generation
 °H. Abe¹, T. Goto¹, M. Naoe², K. Arai², K. Ishiyama¹ (¹Tohoku Univ., ²DENJIKEN)

Magnetostriction

11:15 ~ 12:15

Chair: M. Futamoto (Yokohama Nat. Univ.)

- 29aE-9 Application of negative magnetostrictive materials to unimorph U-shaped device
 °T. Sugiyama, T. Okada, S. Seino, T. Nakagawa, Y. Ohishi, H. Muta, S. Fujieda (Osaka Univ.)
- 29aE-10 Influence of partial substitution of Zn for Cu on magnetostrictive properties of $\text{Cu}_{0.5}\text{Co}_{0.5}\text{Fe}_2\text{O}_4$
 °S. Fujieda, K. Fujiwara, S. Kosugi, S. Seino, T. Nakagawa (Osaka Univ.)
- 29aE-11 Correlation between magnetostriction and magnetic damping in magnetic nitride films
 °K. Ito¹, I. Kurniawan², Y. Miura², Y. Endo¹, T. Seki¹ (¹Tohoku Univ., ²NIMS)
- 29aE-12 Comparison of magnetic flux density change due to inverse magnetostrictive effect between direct and indirect measurements
 °T. Okada, S. Fujieda, S. Seino, T. Nakagawa (Osaka Univ.)

Magnetic physics

13:15 ~ 15:00

Chair: H. Asano (NISRI)

- 29pE-1 Spin-injection Induced Permeability Control for Time-varying Metamaterials
 °T. Kodama, R. Shimizu, N. Kikuchi, S. Okamoto, S. Ohno, S. Tomita (Tohoku Univ.)
- 29pE-2 Numerical study of magnetization structure in helical magnetic materials
 °J. Kaneta¹, J. Ohe¹, M. Mito², M. Ohkuma³ (¹Toho Univ., ²Kyushu Inst. Tech., ³NIMS)
- 29pE-3 Direct observation and stochastic analysis on thermally activated nucleation of individual magnetic domain
 F. Luo¹, K. Toyoki¹, C. Mitsumata², R. Nakatani¹, °Y. Shiratsuchi¹ (¹Osaka Univ., ²Tokyo Univ. Sci.)
- 29pE-4 Estimation of a parameter from a metastable magnetic image by machine learning
 °K. Tanabe, S. Kuno, S. Deguchi, H. Awano (Toyota Tech. Inst.)
- 29pE-5 Thermal stability of magnetization states and reversal fields from the perspective of Landau theory
 °C. Mitsumata¹, M. Kotsugi¹, S. Okamoto² (¹Tokyo Univ. Sci., ²Tohoku Univ.)
- 29pE-6 Study of high-performance descriptor for magnetic materials: Accurate discrimination of magnetic structure
 °M. Suzuki¹, T. Nomoto², E. V. Morooka³, Y. Yanagi⁴, H. Kusunose⁵
 (¹Tohoku Univ., ²Univ. of Tokyo, ³Aalto Univ., ⁴Toyama Pref. Univ., ⁵Meiji Univ.)
- 29pE-7 *In-situ* observation of particles deposition process during High Gradient Magnetic Separation
 °N. Hirota¹, G. Takano², T. Ando² (¹NIMS, ²Nihon Univ.)

Magnetic compounds

15:15 ~ 16:15

Chair: M. Kotsugi (Tokyo Univ. of Sci.)

- 29pE-8 *D//J* Control in Magnetic Skyrmions Host Filled β -Mn-type Chiral magnet
 °B. Qiang¹, M. Togashi¹, M. Kuwahara¹, T. Ito¹, H. Asano^{1,2} (¹Nagoya Univ., ²NISRI)
- 29pE-9 Mixed effects on spin frustration in $\text{Mn}(\text{Nb}_{1-x}\text{Ta}_x)_2\text{O}_6$ antiferromagnets
 °S. Goto¹, H. Hojo¹, S. Kobayashi¹, N. Terada² (¹Iwate Univ., ²NIMS)

- 29pE-10 Crystallized Temperature Dependence of Magnetic Properties for Mg Ferrite Films
°N. Adachi, T. Kondo (Nagoya Inst. Tech.)
- 29pE-11 Magnetic properties of layered metal hydroxides incorporating cinnamate derivative organic layers
°Z. Honda¹, A. Yasuta¹, T. Kida², M. Hagiwara² (¹Saitama Univ., ²Osaka Univ.)

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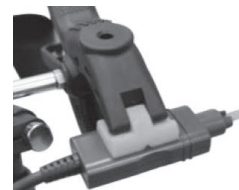


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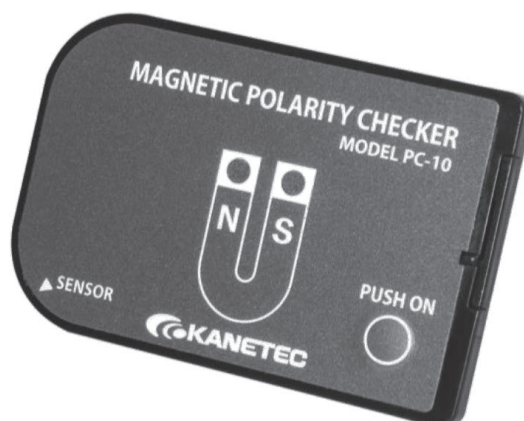
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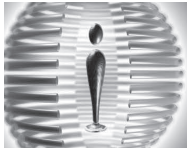
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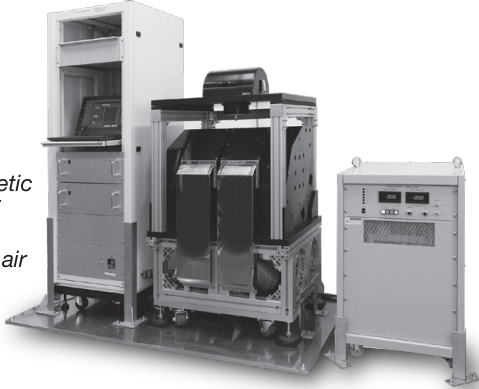
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Vibrating Sample Magnetometer

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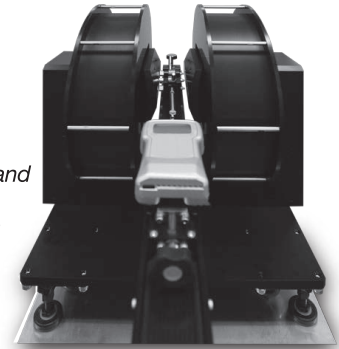
Features
Maximum magnetic field strength:3T
Coil cooling method: Forced air cooling



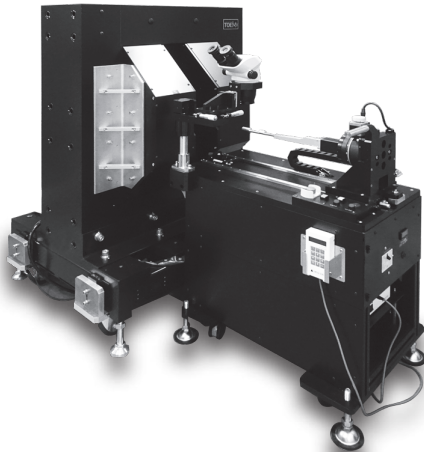
The magnetostriction measuring equipment

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High Sensitivity VNA-FMR Spectrometer



Magnetic Field Prober

Main Model

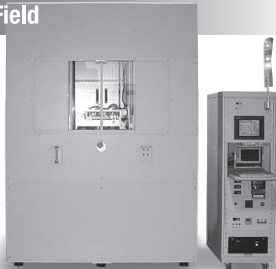
- Omni-Directional magnetic field prober
- Vertical magnetic field prober
- In-plane magnetic field prober
- Rotating magnetic field prober

Prober type

- Full-automatic
- Semi-automatic
- Manual



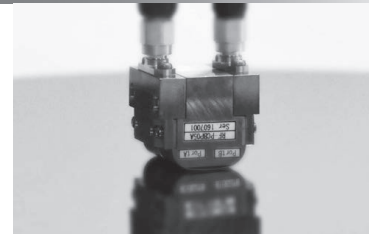
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3D Magnetic Field Profiler



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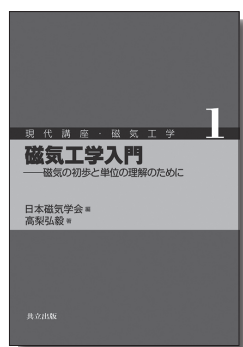
8-29, 4-chome, Tomizawa, Taihaku-ku, Sendai, 982-0032 Japan TEL:+81-22-743-3221, FAX:+81-22-743-3235



<https://www.toei-si.jp/>

[日本磁気学会 編]

現代講座・磁気工学



【各巻：A5判・上製本】

学部上級生から修士・若手技術者を主対象に、新機軸の研究対象と基礎的要素を結びつける重要な基礎理論を丁寧に解説。教科書や解説書など幅広く活用できる。

❶ 磁気工学入門 —磁気の初歩と単位の理解のために—

日本磁気学会『平成23年度出版賞』受賞

高梨弘毅著……………132頁・定価3080円

❷ 磁気工学の解析法

日本磁気学会『令和元年度出版賞』受賞

三俣千春著……………236頁・定価3740円

❸ スピントロニクス —基礎編—

日本磁気学会『平成30年度出版賞』受賞

井上順一郎・伊藤博介著……………294頁・定価4180円

❹ スピントロニクス —応用編—

鈴木義茂・湯浅新治・久保田 均著……………近 刊

❺ 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・定価4400円

マグネティクス・ライブラリー



【各巻：A5判・上製本】

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。重要なトピクスは紙面を割き詳解。

❶ 磁気の付随現象とその応用

井上光輝著……………続 刊

❷ 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・定価5500円

❸ 反強磁性体 —応用への展開—

日本磁気学会『平成29年度出版賞』受賞

深道和明著……………344頁・定価5500円

マグネティクス・イントロダクション



【各巻：A5判・並製本】

磁気の初学者および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、第一線の研究者がやさしく正確に解説する。

❶ 磁気工学超入門 —ようこそ、まぐねの国へ—

佐藤勝昭著……………166頁・定価2750円

❷ メタマテリアルのつくりかた —光を曲げる「磁場」とベリー位相—

日本磁気学会『令和2年度出版賞』受賞

富田知志・澤田 桂著……………224頁・定価2750円

スピントロニクスを用いたエネルギーハーベスティング

水口将輝・藤田麻哉著……………近 刊

マテリアルズ・インフォマティクス

小野寛太他著……………続 刊



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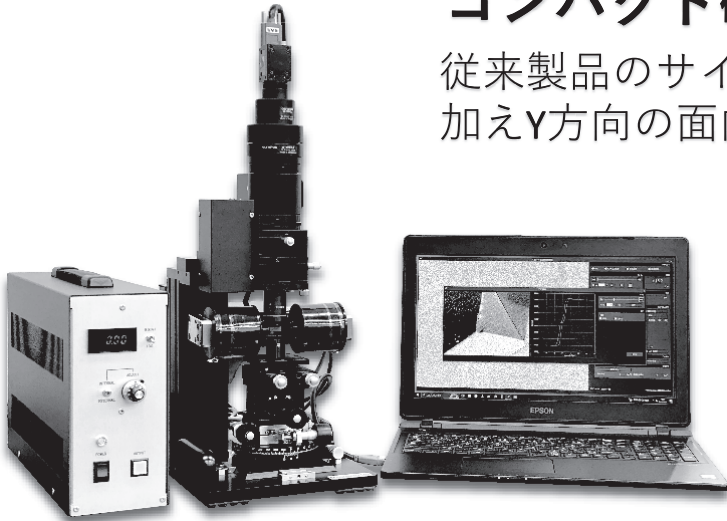
磁気光学Kerr効果 関連製品

実機展示予定

面内XY方向観察対応
コンパクト磁区観察装置

新モデル!

従来製品のサイズはそのままに、X方向に加えY方向の面内磁区観察に対応しました。



- 空間分解能1~3 μ m以下
- 回転磁場制御対応
四極電磁石(> $\pm 0.1T$)等
応相談
- 垂直観察への切替、
垂直磁場印可 応相談

試作展示予定

プローブ型 磁気光学Kerr効果
測定ユニット *開発中

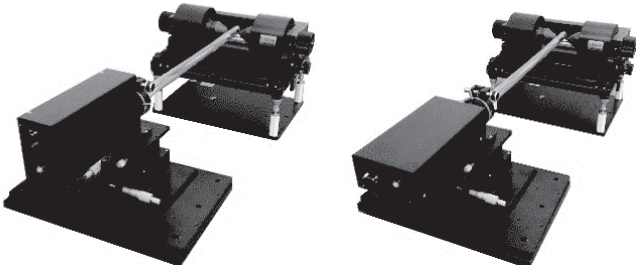


既にお持ちの電磁石を活用し、検出部を電磁石磁極間に配置して磁気光学Kerr効果を測定するユニット製品です。プローブ部分を回転させることにより垂直/面内磁場印加によるループ測定が可能です。

(面内/垂直成分分離オプション有)

垂直磁場印加測定

面内磁場印加測定



- Kerr効果検出感度
0.005deg以下 *条件による
- プローブ直径 22mm
*対応可能な電磁石の
磁極間隔 要22mm以上

上記以外にも多種多様な製作実績有り! テスト観察・測定のご依頼等ぜひお気軽にお問合せください

世界初! 高温超電導型VSM

新製品

TOEI

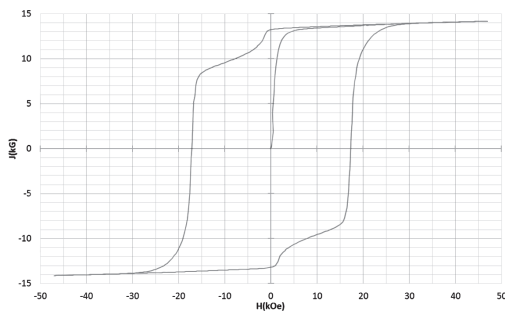
世界初*、高温超電導マグネットをVSMに採用することで
測定速度 当社従来機 1/20 を実現。

0.5mm cube 磁石のBr, HcJ 高精度測定が可能と
なりました。

*2014年7月 東英工業調べ

測定結果例

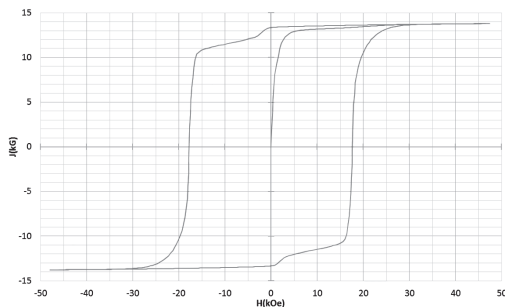
高温超電導VSMによるNdFeB(sint.) 0.5mm cube BHカーブ



磁化測定レンジ: 0.2emu

Br = 13.2kG HcJ = 17.2kOe

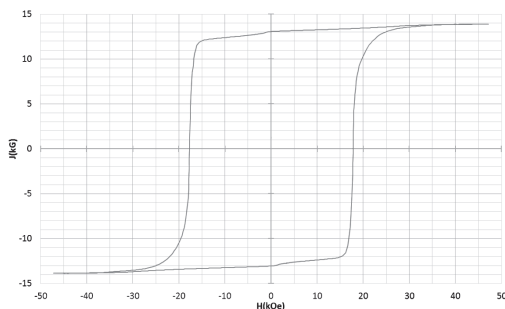
高温超電導VSMによるNdFeB(sint.) 1mm cube BHカーブ



磁化測定レンジ: 2emu

Br = 13.3kG HcJ = 17.7kOe

高温超電導VSMによるNdFeB(sint.) 4mm cube BHカーブ



磁化測定レンジ: 100emu

Br = 13.1kG HcJ = 17.8kOe



高速測定を実現

高温超電導マグネット採用により、高速測定を
実現しました。Hmax = 5Tesla, Full Loop 測定が
2分で可能です。

(当社従来機: Full Loop 測定 40分)

小試料のBr, HcJ 高精度測定

0.5mm cube 磁石のBr, HcJ 高精度測定ができ、
表面改質領域を切り出しBr, HcJの強度分布等、
微小変化量の比較測定が可能です。

また、試料の加工劣化の比較測定が可能です。

試料温度可変測定

-50°C ~ +200°C 温度可変UNIT (オプション)

磁界発生部の小型化

マグネットシステム部寸法: 0.8m × 0.3m × 0.3m

極微小信号を忠実に増幅

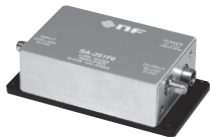
低雑音

広帯域

高安定

電圧アンプ

SA-200/SA-400 シリーズ



SA-251F6

- 低雑音
入力換算雑音電圧
0.25nV $\sqrt{\text{Hz}}$ (SA-251F6)
- 広帯域 DC~最高 500MHz
- 周波数帯域、入力形式、
入力インピーダンスによって、
11 モデルをラインナップ

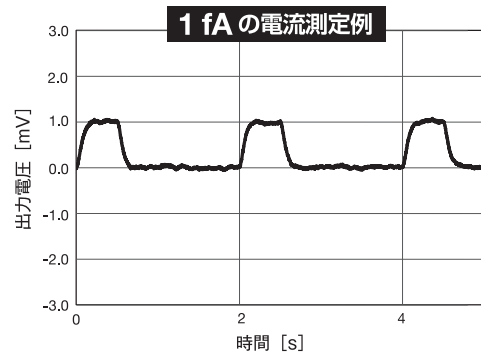
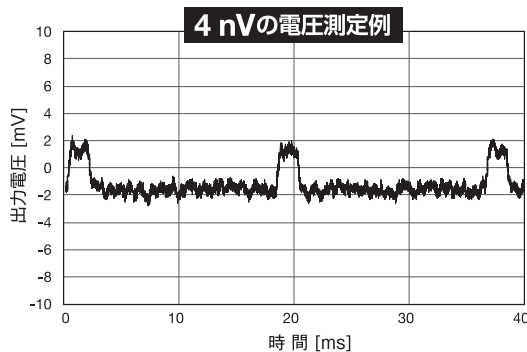
電流アンプ

SA-600 シリーズ



SA-609F2

- 高利得と広帯域を両立
(1T V/A、DC ~ 300Hz)
- センサ・接続ケーブルの容量
に対して安定動作
- 利得・周波数帯域によって
6 モデルをラインナップ



低雑音直流電源 LPシリーズ

センサ・デバイス・プリアンプの電源に

- 出力雑音電圧：10 μ Vrms 以下 typ.
- 出力電圧安定度： ± 10 ppm/ $^{\circ}\text{C}$ typ.
- 出力電圧：0 \sim ± 15 V
- 出力電流：最大 0.1A

LP5394



株式会社 エヌエフ回路設計ブロック

本社/横浜市港北区綱島東6-3-20 〒223-8508
営業 TEL 045-545-8111 FAX 045-545-8191

詳細はウェブサイトをご覧ください

スマートフォンから▶

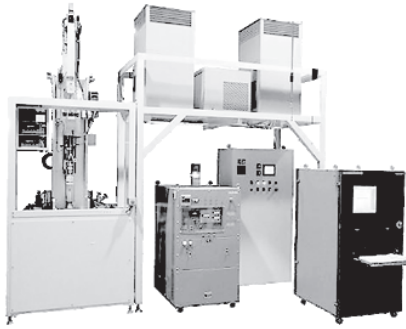
PCから▶ www.nfcorp.co.jp



着磁・脱磁・磁気測定器は NDKへ御用命ください!

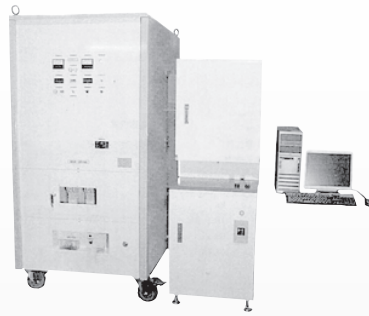
温度可変型 磁化特性測定装置 (BHカーブトレーサ)

超電導磁石式 SBH-1000



静磁場測定のため、渦電流の影響が少ない
大型磁石φ30の測定が可能
励磁磁界: 5 (T) 最大
温度試験: 200 (°C) 最大

パルス励磁式 PBH-1000



パルス励磁で高速・高精度測定
標準試料 φ10 L=7
励磁磁界: 12 (T) 最大
温度試験: 250 (°C) 最大

磁界分布測定装置

USB通信式マグネットアナライザ



UHS-3DS X-Y-Z-R (回転+リニア)
パソコン通信はUSBケーブルのみ
テスラメータ内蔵でデジタル通信
特殊仕様 設計製作可能

高出力型着磁器

小径・多極着磁に対応!

着磁ヨークを直接接続し
ケーブルロスを最小限に



ケーブルレス型
着磁器
SX-L2510

特殊同軸ケーブル
を使用
着磁器
SR-L2506

各種着磁ヨーク

年間1,000台以上の実績



外周多極スキュー
着磁ヨーク

内周多極
着磁ヨーク

平面複合型
着磁ヨーク

磁気測定器

高精度と信頼性、利便性が抜群

マルチ測定対応の高機能機

USB対応フラックスメータ **NFX-1000A**



ワイドレンジ、高性能が自慢

テスラメータ **TGX-1000**



携帯性に優れるハンディ型

テスラメータ **GV-400**

NDKでは、上記の他にも多数、製品を取り揃えています。ぜひお問い合わせください



日本電磁測器株式会社

URL: <http://www.j-ndk.co.jp>

E-Mail: info@j-ndk.co.jp

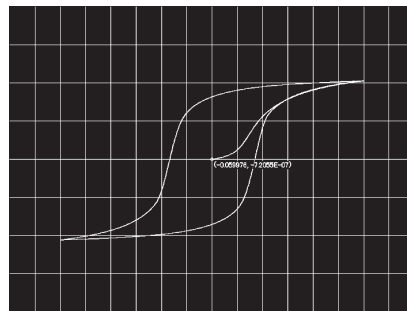
本社営業部 〒190-0031 東京都立川市砂川町8-59-2
TEL: 042-537-3511 FAX: 042-535-7567
関西営業所 TEL: 06-6390-5453 FAX: 06-6390-1054
東海営業所 TEL: 0566-93-2020 FAX: 0566-93-2021
上海瑞穂磁気有限公司、上海笠原電装有限公司、NDK ASIA CO.,LTD.

磁気特性アナライザ

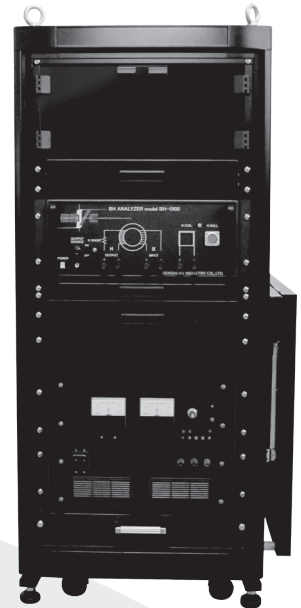
軟磁性材料に最適！

測定モード

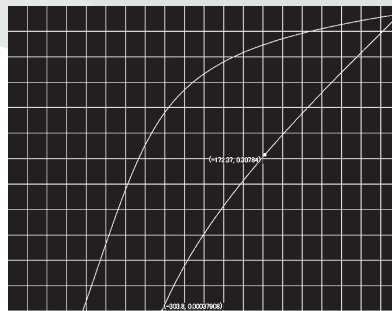
- ・ 直流磁化特性
- ・ 非履歴磁化特性
- ・ 偏磁磁化特性
- ・ 交流磁化特性



BH-1000



軟磁性材料（ソフト材）の各種磁化特性を測定。オリジナルサンプリング方式を採用し、ドリフトレスを実現。任意波形によるマイナーループなどの実環境下での測定が可能。



硬磁性材料に最適！

測定モード

- ・ 直流磁化特性
- ・ 高保磁力材料減磁特性

硬質磁性材料（ハード材）の各種磁気特性を測定。オプションで軟磁性材料測定機能も搭載可能。BH-1000と同様、ドリフトレス。減磁曲線のリコイル透磁率算出に役立つ任意波形機能も標準搭載。

BH-1000H

※カタログの仕様及び外観等は、改良の為予告なしに変更する場合がございます。

RIBER

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主な製品ラインナップ

- 標準型クヌーセンセル
- バルブドクラッカーセル
(ヒ素、リン、アンチモン向け)
- 大容量・高安定性III族セル
- 窒化物向け高耐性エフュージョンセル
- 特殊用途セル
(高温セル、昇華型カーボンセル)
- 窒素、酸素RFプラズマ源
- 高温・低温ガスインジェクター



Hakuto

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特徴

- スピントロニクス分野での実績多数
- 国産イオンソース搭載機を新価格でご提案
- 真空コンポーネントはPfeiffer Vacuum 社製
(弊社総代理店)を標準装備
- 廉価版など、ご予算に応じた機器構成をご提案
- GUIによる直観的なプロセス操作
- 国内デモ随時承ります。



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お問い合わせ先

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