

PROGRAM

Aug. 31/Room A

Hyperthermia • Medical applications

9:00 ~ 10:30

Chair: S. Ota (Shizuoka Univ.)

- 31aA-1 Consideration of analysis area of current source estimation by spatial filter in MCG
°M. Iwai¹, K. Kobayashi¹, W. Sun² (¹Iwate Univ., ²Kinki Univ.)
- 31aA-2 Detection of Magnetic Resonance Signal without Prepolarization Technique in Ultra-low Magnetic Field
°D. Oyama¹, S. Shibata² (¹Kanazawa Inst. Tech., ²RICOH)
- 31aA-3 Differential effects of 60 Hz magnetic fields on anticancer drug potency in human uterine sarcoma cell lines with and without multidrug resistance
°R. Shibaki¹, M. Kakikawa¹, S. Yamada² (¹Kanazawa Univ., ²Komatsu Univ.)
- 31aA-4 Preparation of spherical (La, Sr)MnO₃ heating mediator for magnetic hyperthermia by electrostatic adsorption
°K. Yamada¹, S. Seino¹, S. Fujieda¹, A. Yokoi², K. W. Tan², H. Muto², T. Nakagawa¹ (¹Osaka Univ., ²Toyohashi Univ. Tech.)
- 31aA-5 Evaluation of magnetic heating efficiency of silica-coated magnetic nanoparticles
°Y. Kimura, J. Sakurai, S. Hata, C. Oka (Nagoya Univ.)
- 31aA-6 Development of PID-based Automatic Temperature Control System for Magnetic Hyperthermia
°A. Shikano, L. Tonthat, A. Kuwahata, S. Yabukami (Tohoku Univ.)

Nanoparticles (High frequency properties)

10:45 ~ 12:15

Chair: L. TON THAT (Tohoku Univ.)

- 31aA-7 Magnetic anisotropy of magnetically fractionated Ferucarbotran
°M. Ishikawa¹, S. Ota², S. Trisnanto¹, T. Yamada¹, T. Yoshida³, Y. Takemura¹
(¹Yokohama National Univ., ²Shizuoka Univ., ³Kyushu Univ.)
- 31aA-8 FORC measurement of superparamagnetic nanoparticles with oriented easy axis
°E. Sasaoka¹, C. Yang^{1,2}, S. B. Trisnanto¹, I. Kobayashi¹, T. Yamada¹, Z. Song², S. Ota³, Y. Takemura¹
(¹Yokohama National Univ., ²Nanjing Vocational Univ. of Industry Technology, ³Shizuoka Univ.)
- 31aA-9 AC magnetic susceptibility of magnetic nanoparticles whose orientation is controlled by DC magnetic field
°S. Noguchi¹, S. B. Trisnanto¹, T. Yamada¹, S. Ota², Y. Takemura¹ (¹Yokohama National Univ., ²Shizuoka Univ.)
- 31aA-10 Experimental and simulation studies of dynamic MH loop with DC magnetic field of magnetic nanoparticles
°E. Kita¹, R. Onodera², M. Kishimoto¹, H. Yanagihara¹ (¹Univ. of Tsukuba, ²NIT, Ibaraki Coll.)
- 31aA-11 Physical rotation of iron oxide magnetic nanoparticles under alternating magnetic field
°M. Suwa, S. Kawahigashi, S. Tsukahara (Osaka Univ.)
- 31aA-12 Complex magnetization dynamics of Neel and Brownian relaxations in magnetic nanoparticles
°S. Ota¹, R. Miyazawa¹, D. Nagata², M. Futagawa¹, Y. Takemura² (¹Shizuoka Univ., ²Yokohama National Univ.)

Symposium "Recent progress of relationship between magnetism and light"

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

13:00 ~ 14:30

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

- 31pA-1 Large magneto-optical effects in a non-collinear antiferromagnet and its application for antiferromagnetic spintronics
°T. Higo (Univ. of Tokyo)
- 31pA-2 Theoretical proposal for control of spin textures and vortices with topological light waves
°M. Sato (Ibaraki Univ.)
- 31pA-3 Metamaterials and metasurfaces with broken symmetries
°S. Tomita (Tohoku Univ.)

14:45 ~ 16:45

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

- 31pA-4 Focused-millimeter-wave-assisted magnetic recording based on epsilon iron oxide
°S. Ohkoshi (Univ. of Tokyo)
- 31pA-5 Development of magnetic holographic memory using artificial magnetic lattice media
°Y. Nakamura¹, P. Lim¹, M. Inoue^{1,2} (¹Toyohashi Univ. Tech., ²National Inst. Tech.)
- 31pA-6 Near-Infrared Magneto-Refractive Effect for Magnetic Multilayer; GMR film and Ferro./Antiferro. stacked film with Surface Plasmon Resonance
°S. Saito¹, H. Uchida² (¹Tohoku Univ., ²Toyohashi Univ. Tech.)
- 31pA-7 Faraday effect of nanogranular films
°N. Kobayashi, K. Ikeda, K. Arai (DENJIKEN)

Aug. 31/Room B

Magnetic properties

9:00 ~ 10:45

Chair: H. Nakayama (AIST)

- 31aB-1 Levitation mechanism of bending electromagnetic suspension for flexible steel plate (Fundamental consideration on vibration characteristics using FDM)
°R. Miyazaki¹, K. Funada¹, K. Ogawa¹, A. Endo², T. Narita¹, H. Kato¹ (¹Tokai Univ., ²FIT)
- 31aB-2 The effect of atomic disorder in nitrogen-doped FeNi alloys with high magnetic anisotropy
°Z. Qiao^{1,2}, M. Tsujikawa^{2,3}, M. Shirai^{2,3} (¹Grad. Sch. of Eng., Tohoku Univ., ²RIEC, Tohoku Univ., ³CSRN, Tohoku Univ.)
- 31aB-3 Modification of magnetic anisotropy of La_{1-x}Sr_xMnO₃ thin film/BaTiO₃(100)
°S. Ishikawa, S. Komori, K. Imura, T. Taniyama (Nagoya Univ.)
- 31aB-4 Magneto-electric effect of ferroelectric and ferromagnetic oxide laminated films prepared by metal organic decomposition
°T. Ichinomiya, K. Kamishima, K. Kakizaki (Saitama Univ.)
- 31aB-5 Development of BiFeO₃ based multiferroic thin film materials with large saturation magnetization and perpendicular magnetic anisotropy -Effect of substitution element against Bi on magnetic properties-
°S. Yoshimura, T. Ozeki, R. Suzuki, K. Takeda, D. Yamamoto, G. Egawa (Akita Univ.)
- 31aB-6 Development of BiFeO₃ based multiferroic thin film materials with large saturation magnetization and perpendicular magnetic anisotropy -Effect of substitution element against Fe on magnetic properties-
°T. Ozeki, D. Yamamoto, G. Egawa, S. Yoshimura (Akita Univ.)
- 31aB-7 Element-specific magnetic states and magnetic compensation in Mn₂(Co_{1-x}V_x)Al studied by XMCD
°J. Okabayashi¹, T. Tsuchiya², S. Mizukami² (¹Univ. of Tokyo, ²Tohoku Univ.)

Skyrmion and Topological materials

11:00 ~ 12:15

Chair: M. Shirai (Tohoku Univ.)

- 31aB-8 Multiple-valued Memory Utilized Chiral Magnetic Syrmion
°J. Watanabe, Y. Nakatani (UEC)
- 31aB-9 Control of magnetic skyrmionium on TbFeCo films
°S. Kato¹, K. Ohara¹, X. Zhang¹, J. Xia², X. Liu¹ (¹Shinshu Univ., ²CUHK)
- 31aB-10 Anomalous Hall effect of noncollinear antiferromagnetic antiperovskite nitrides
°K. Sonoda, H. Kato, K. Matsuura, B. Qiang, T. Hajiri, K. Ueda, H. Asano (Nagoya Univ.)
- 31aB-11 The Effect of Confinement and Protection of Skyrmions
°K. Ohara¹, X. Zhang¹, Y. Chen¹, J. Xia², Y. Zhou², X. Liu¹ (¹Shinshu Univ., ²CUHK)
- 31aB-12 Configurable pixelated skyrmions on nanoscale grids
°X. Zhang¹, J. Xia¹, K. Shirai¹, H. Fujiwara¹, O. A. Tretiakov², M. Ezawa³, Y. Zhou⁴, X. Liu¹
(¹Shinshu Univ., ²UNSW Sydney, ³Univ. of Tokyo, ⁴CUHKSZ)

Symposium "New trends in magnetic field application"

Chief Organizer: M. Yamato (Tokyo Metropolitan Univ.)

13:00 ~ 15:00

Chair: N. Hirota (NIMS)

- 31pB-1 Recent progress in magneto-Archimedes levitation
°Y. Ikezoe (Nippon Inst. Tech.)
- 31pB-2 Electromagnetophoretic microfluidic technique for the separation of micro particles
°Y. Iiguni (Nagoya Inst. Tech.)

31pB-3 Development of in situ solid-state NMR system for magnetically oriented microcrystal suspensions
°R. Kusumi (Kyoto Univ.)

31pB-4 Magnetic field effect on the preparation process of carbon materials
°A. Hamasaki (Shinshu Univ.)

15:15 ~ 16:45

Chair: A. Sugiyama (Yoshino Denka)

31pB-5 Delay of magnetic field-induced martensitic transformation in some ferrous alloys
Y. Song¹, °T. Terai², T. Fukuda², Y. Narumi², M. Hagiwara², K. Sato², M. Sugiyama², T. Kakeshita³
(¹Tohoku Univ., ²Osaka Univ., ³Fukui Univ. Tech.)

31pB-6 Dynamic hysteresis measurement of a magnetic nano particle suspension under a DC bias magnetic field
°R. Onodera¹, E. Kita^{1,2}, H. Yanagihara² (¹NIT, Ibaraki Coll., ²Univ. of Tsukuba)

31pB-7 In-field annealing for precipitation of magnetic alloys
°Y. Mitsui¹, M. Onoue¹, S. Kuzuhara², W. Ito², K. Koyama¹ (¹Kagoshima Univ., ²NIT, Sendai Coll.)

Aug. 31/Room C

Magnetic recording media

13:00 ~ 14:45

Chair: T. Tanaka (Kyushu Univ.)

31pC-1 Analysis of film thickness dependence of degree of order and perpendicular magnetic anisotropy energy for FePt granular film with structural inhomogeneity
°T. Saito¹, K. Tham², R. Kushibiki², T. Ogawa¹, S. Saito¹ (¹Tohoku Univ., ²TANAKA)

31pC-2 Evaluation of magnetocrystalline anisotropy energy of FePt grains in FePt granular film including FePt grains with *c*-axes parallel to the film plane
°T. Saito¹, K. Tham², R. Kushibiki², T. Ogawa¹, S. Saito¹ (¹Tohoku Univ., ²TANAKA)

31pC-3 Effect of FePt-C nucleation layer on *c*-axes orientation and perpendicular magnetic anisotropy energy for FePt-C / FePt-oxide stacked granular media
°K. Tham¹, T. Saito², R. Kushibiki¹, S. Saito² (¹TANAKA, ²Tohoku Univ.)

31pC-4 Evaluation of crystalline texture for thin film magnetic recording media utilizing two-dimensional X-ray Detector
°D. Miyazaki¹, T. Ogawa¹, I. Tagawa², S. Saito¹ (¹Tohoku Univ., ²Tohoku Inst. Tech.)

31pC-5 Magnetic properties of nanoparticles produced by RTA from an ultra - thin Fe film sandwiched between SiO_x and SiN
°K. Komatsuda, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)

31pC-6 Thermal activation on microwave assisted magnetization switching in Co/Pt nanodot arrays
°S. Mizutani, N. Kikuchi, M. Hatayama, T. Shimatsu, S. Okamoto (Tohoku Univ.)

31pC-7 Effect of Dot Volume on Recording Performance in 3D HAMR Bit Patterned Media
°H. Yamane, S. J. Greaves, Y. Tanaka (Tohoku Univ.)

Simulation of magnetization dynamics

15:00 ~ 16:45

Chair: C. Mitsumata (NIMS)

31pC-8 Minus Spin-Polarization Tri-Layer STO for MAMR
°I. Tagawa (Tohoku Inst. Tech.)

31pC-9 Micromagnetic analysis of Dual FGL STO
°R. Itagaki¹, Y. Kanai¹, S. Greaves² (¹Niigata Inst. Tech., ²Tohoku Univ.)

31pC-10 Dependence of MAS and signal recording characteristics on layer anisotropy structure for multilayer media
°K. Kurihara¹, X. Ya¹, K. Kawakami¹, Y. Kanai², T. Tanaka¹ (¹Kyushu Univ., ²Niigata Inst. Tech.)

31pC-11 Microwave-assisted magnetization reversal analysis based on static energy approximation method
°K. Kawakami, K. Kurihara, X. Ya, T. Tanaka (Kyushu Univ.)

31pC-12 Simulation of the switching rate of STT-MRAM
°K. Kawakami, Y. Nakatani (UEC)

31pC-13 A Study of Low Current Recording for Parallel Magnetic Nanowire Memory using Recording Metal Wires
°K. Ogura, N. Nakatani, M. Takahashi, N. Ishii, Y. Miyamoto (NHK STRL)

31pC-14 Master structure dependence of magnetic printing performance by utilizing double magnet mater media
°T. Komine (Ibaraki Univ.)

Aug. 31/Room D

Power magentics (Inductor)

9:15 ~ 10:00

Chair: A. Endo (Fukuoka Inst. Tech.)

- 31aD-1 Orthogonal-core-type Variable Inductor consisted of Cut-core and Laminated-core
°T. Sato¹, K. Nakamura¹, T. Ohinata², K. Arimatsu² (¹Tohoku Univ., ²Tohoku Electric Power)
- 31aD-2 Fabrication of magnetic ultrafine particle embedded porous alumina for power inductor and their properties
°T. Hamada¹, Y. Endo², K. Yabumoto¹, M. Ishitobi¹, A. Tayaoka³, N. Fujita¹
(¹NIT, Nara Coll., ²Tohoku Univ., ³NIT, Kitakyusyu Coll.)
- 31aD-3 Air-core Inductor with High Energy Density and Low Loss
°I. Masuda¹, E. Asahina¹, K. Maeda², M. Ishitobi¹ (¹NIT, Nara Coll., ²DAIHEN)

Power magentics (Magnetic actuator)

10:30 ~ 12:00

Chair: K. Nakamura (Tohoku Univ.)

- 31aD-4 A study on ANC system for ultra-compact EV by using giant magnetostrictive actuator (Fundamental consideration on output characteristics of road noise range)
°T. Kato¹, T. Kitamura¹, F. Maehara¹, H. Nakayama¹, A. Endo², H. Kato¹, T. Narita¹ (¹Tokai Univ., ²FIT)
- 31aD-5 A Study on Linear actuator installed on cylinder head
°Y. Majima¹, J. Kuroda¹, R. Suzuki¹, A. Endo², T. Narita¹, H. Kato¹ (¹Tokai Univ., ²FIT)
- 31aD-6 Development of electromagnetic guideway for seamless ultra-thin steel plate (Basic consideration of damping effect on electromagnet installation position)
°R. Nakasuga¹, K. Ogawa¹, A. Endo², T. Narita¹, H. Kato¹ (¹Tokai Univ., ²FIT)
- 31aD-7 Electromagnetic levitation and transportation system for bent thin steel plate (Fundamental consideration on acted position of electromagnetic force)
°A. Shiina¹, S. Kayama¹, B. Muhammad Nur Hakimi¹, K. Ogawa¹, A. Endo², T. Narita¹, H. Kato¹ (¹Tokai Univ., ²FIT)
- 31aD-8 Development of electromagnetic levitation system for thin steel plate with electromagnets and permanent magnets (Fundamental consideration on acted position of tension)
°S. Kayama¹, B. Muhammad Nur Hakimi¹, A. Shiina¹, K. Ogawa¹, A. Endo², T. Narita¹, H. Kato¹ (¹Tokai Univ., ²FIT)
- 31aD-9 Electromagnetic levitation system for flexible steel plate using magnetic field from horizontal direction (fundamental consideration on vibration characteristic in levitating)
°A. Endo¹, S. Kayama², A. Shiina², B. Muhammad Nur Hakimi², K. Ogawa², T. Narita², H. Kato² (¹FIT, ²Tokai Univ.)

Power magentics (Motor I)

13:00 ~ 14:15

Chair: K. Tajima (Akita Univ.)

- 31pD-1 Examination of Restarting Torque of Induction/Synchronous Magnetic Gears
°Y. Mizuana¹, K. Nakamura¹, Y. Suzuki², Y. Tachiya², K. Kuritani² (¹Tohoku Univ., ²Prospine)
- 31pD-2 Cogging Torque Reduction of Integer Gear Ratio Magnetic Gear by Applying Unbalanced Pole-Pieces
°B. Dai¹, K. Nakamura¹, Y. Suzuki², Y. Tachiya², K. Kuritani² (¹Tohoku Univ., ²Prospine)
- 31pD-3 A Consideration of Power Factor and Efficiency if IPM-type Magnetic Geared Motor
°K. Ito, K. Nakamura (Tohoku Univ.)
- 31pD-4 Basic Characteristics of Transverse-Flux-type Switched Reluctance Motor with Permanent Magnets applying Reverse Bias Magnetic Field
°A. Nagai, K. Mitsuya, K. Nakamura (Tohoku Univ.)
- 31pD-5 Characteristics Investigation of SMC-based SR Motor Manufactured by using Wire Electric Discharge Machining
°K. Mitsuya, K. Nakamura (Tohoku Univ.)

Power magentics (Motor II)

14:30 ~ 15:30

Chair: M. Sonehara (Shinshu Univ.)

- 31pD-6 Prototype Evaluation of Inset PM Motor made of NANOMET Laminated Core
°Y. Yu¹, S. Hiramoto², K. Nakamura¹ (¹Tohoku Univ., ²Tohoku Magnet Institute Co., Ltd.)
- 31pD-7 Outer-Rotor-type High-Speed PM motor with Segmented-shaped Rotor
°S. Sakurai, Y. Uchiyama, K. Nakamura (Tohoku Univ.)
- 31pD-8 Experimental Study of Losses of Axial-Flux-type Switched Reluctance Motor for Compact EV
°K. Sato, K. Nakamura (Tohoku Univ.)

Sep. 1/Room A
Nanoparticles (Imaging) **9:00 ~ 10:30** Chair: M. Suwa (Osaka Univ.)

- 01aA-1 Magnetic particle imaging using magnetoresistive sensor
°S. Trisnanto¹, T. Kasajima², T. Akushichi², Y. Takemura¹ (¹Yokohama National Univ., ²TDK)
- 01aA-2 Design of gradient magnetic field coil using superconducting tape for human body size MPI
°M. Yoshimoto¹, H. Morioka¹, T. Sasayama¹, Y. Takemura², T. Yoshida¹ (¹Kyushu Univ., ²Yokohama National Univ.)
- 01aA-3 Imaging technique of magnetic nanoparticles using pulse magnetic field
°S. Tanaka¹, H. Hirano¹, M. Futagawa¹, Y. Takemura², S. Ota¹ (¹Shizuoka Univ., ²Yokohama National Univ.)
- 01aA-4 Comparison of the application results of various spatial filters in magnetic nanoparticle tomography
°N. Okamura, K. Higashino, T. Sasayama, T. Yoshida (Kyushu Univ.)
- 01aA-5 Surface design of iron-oxide nanoparticles for intracerebral magnetic particle imaging
°S. Seino¹, H. Ikehata¹, M. Tanabe¹, T. Umeda², T. Tomiyama², A. Tanaka³, T. Sakane³, K. Yamauchi⁴, K. Nomura⁴,
S. Tonooka⁴, A. Izawa⁵, S. Fujieda¹, T. Nakagawa¹
(¹Osaka Univ., ²Osaka City Univ., ³Kobe Pharm. Univ., ⁴MITSUBISHI, ⁵Nihon Medi-Physics)
- 01aA-6 Evaluation of magnetic particle magnetization characteristics for high sensitivity Magnetic Particle Imaging
°K. Nomura¹, K. Yamauchi¹, M. Washino¹, T. Matsuda¹, Y. Okada¹, Y. Susumu¹, S. Seino², T. Nakagawa², T. Kiwa³,
S. Tonooka¹ (¹MITSUBISHI, ²Osaka Univ., ³Okayama Univ.)

Nanoparticles (Bio-sensing) **10:45 ~ 12:00** Chair: D. Koyama (Kanazawa Inst. Tech.)

- 01aA-7 Basic study of the effect of magnetic dipole interaction on magnetization properties of magnetic nanoparticles
°K. Ikeda, T. Sasayama, T. Yoshida (Kyushu Univ.)
- 01aA-8 Discrimination of solid and liquid phase states of magnetic nanoparticles using harmonic spectra.
°J. Goto, S. Yamamura, K. Enpuku, T. Yoshida (Kyushu Univ.)
- 01aA-9 Development of magnetic immunoassay for detection of liquid tumor cells
°M. Tsubota, K. Yamashita, K. Kishimoto, H. Kuroda, J. Wang, K. Sakai, T. Kiwa (Okayama Univ.)
- 01aA-10 Measurement of multiple bacteria species using magnetic nanoparticles by switching magnetic field
°S. Takahashi¹, H. Onodera², T. Murayama², L. Tonthat¹, K. Okita², A. Kuwahata¹, S. Yabukami^{1,2}, W. Ohtsubo¹, K. Yokota¹,
², M. Huruya¹, H. Kanetaka¹, Y. Miura³, H. Takahashi³ (¹Tohoku Univ., ²Tohoku Gakuin Univ., ³JNS)
- 01aA-11 Evaluation of antigen-antibody reaction of magnetic nanoparticles with directly adsorbed antibodies
°T. Yoneyama¹, T. Murayama², L. Tonthat¹, A. Kuwahata¹, S. Yabukami¹, Y. Sato³, Y. Teramura⁴, W. Ohtsubo¹, T. Ogawa¹
(¹Tohoku Univ., ²Tohoku Gakuin Univ., ³Univ. of Tokyo, ⁴AIST)

Symposium "Medical applied research of Biomagnetics" Chief Organizer: K. Kobayashi (Iwate Univ.)

13:00 ~ 15:30 Chair: K. Kobayashi (Iwate Univ.)

- 01pA-1 History and progress of biomagnetic measurement
°Y. Uchikawa (Tokyo Denki Univ.)
- 01pA-2 Magnetocardiography predictors of premature ventricular contractions origin in LVOT vs. RVOT
°W. Sun¹, M. Iwai², K. Kobayashi² (¹Kindai Univ., ²Iwate Univ.)
- 01pA-3 Novel functional imaging methods by Magnetospinography and Magnetoneurography
°T. Watanabe¹, S. Kawabata², Y. Adachi³, J. Hashimoto², K. Sekihara², M. Akaza², Y. Miyano¹, Y. Okada¹, A. Okawa²
(¹Ricoh, ²Tokyo Med. Dent. Univ., ³Kanazawa Inst. Tech.)
- 01pA-4 Usefulness and prospects of magnetic materials and magnetic probes in surgery of breast cancer
°K. Taruno¹, M. Sekino², A. Kuwahata^{2,3}, S. Nakamura¹, K. Enokido¹, T. Kurita⁴, H. Takei⁴, M. Kusakabe^{2,5}
(¹Showa Univ., ²Univ. of Tokyo, ³Tohoku Univ., ⁴Nippon Med. Sch. HP, ⁵Matrix Cell Research Inst.)
- 01pA-5 Hyperthermia using functional magnetic nanoparticles
°A. Ito (Nagoya Univ.)

Sep. 1/Room B

Topological insulator, Mn compounds and anomalous Nernst effect

9:00 ~ 10:30

Chair: K. Yamada (Gifu Univ.)

- 01aB-1 Voltage-control of magnetic properties in topological-insulator/magnetic-insulator bilayers
°T. Chiba¹, A. O. Leon², T. Komine³ (¹NIT, Fukushima Coll., ²Metropolitan Tech. Univ., ³Ibaraki Univ.)
- 01aB-2 Current-driven magnetic domain motion in magnetic nanowire with topological insulator BiSb
°N. Nakatani¹, M. Takahashi¹, K. Ogura¹, N. Ishii¹, N. H. Pham^{2,3}, Y. Miyamoto^{1,3} (¹NHK, ²Tokyo Inst. Tech., ³JST-CREST)
- 01aB-3 Laser pulse induced spin precessional dynamics and spin mixing conductance in Co₂MnSi/Pt
°Y. Sasaki¹, Y. Takahashi¹, S. Kasai^{1,2} (¹NIMS, ²JST-PREST)
- 01aB-4 Magnetization switching driven by spin-orbit torque from a Co₂MnGa magnetic Weyl semimetal thin film
°K. Tang^{1,2}, Z. Wen¹, Y. Lau³, H. Sukegawa¹, T. Seki³, S. Mitani^{1,2} (¹NIMS, ²Univ. of Tsukuba, ³Tohoku Univ.)
- 01aB-5 Anomalous Nernst effect dependence on composition in Fe_{100-x}Rh_x alloys
°T. Yamauchi, Y. Hamada, Y. Kurokawa, H. Yuasa (Kyushu Univ.)
- 01aB-6 Enhancement of transverse Seebeck coefficient using semiconductor/ferromagnetic metal multilayer
°R. Kitaura¹, T. Ishibe¹, H. Sharma², M. Mizuguchi^{2,3}, Y. Nakamura¹ (¹Osaka Univ., ²Tohoku Univ., ³Nagoya Univ.)

Tunnel magnetoresistance

10:45 ~ 12:00

Chair: H. Tanigawa (Sony semiconductor)

- 01aB-7 Theoretical study for unconventional (111)-oriented magnetic tunnel junctions
°K. Masuda¹, H. Itoh², Y. Sonobe¹, H. Sukegawa¹, S. Mitani¹, Y. Miura¹ (¹NIMS, ²Kansai Univ.)
- 01aB-8 Fe/MgO/Fe(001): Observation of tunnel magnetoresistance exceeding 400% at room temperature and 900% at low temperature
T. Scheike, Q. Xiang, Z. Wen, °H. Sukegawa, T. Ohkubo, K. Hono, S. Mitani (NIMS)
- 01aB-9 Improved bias-voltage dependence of magnetoresistance by tri-layered tunnel barrier of MgO and MgAl₂O₄
°K. Nawa^{1,2}, K. Masuda², Y. Miura² (¹Mie Univ., ²NIMS)
- 01aB-10 Dielectric breakdown characteristics of lattice-matched MgAl₂O₄-based magnetic tunnel junctions
°H. Sukegawa¹, Z. Wen¹, S. Kasai¹, A. Kumar¹, T. Ohkubo¹, K. Hono¹, S. Mitani¹, S. Ichikawa², K. Nakada² (¹NIMS, ²TDK)
- 01aB-11 Fabrication of tunnel magnetoresistance devices with even-function type resistance-field response
°N. Nakatani, P. D. Kulkarni, H. Iwasaki, Y. Sakuraba (NIMS)

Spin transfer torque

13:00 ~ 14:00

Chair: Y. Kurokawa (Kyushu Univ.)

- 01pB-1 Effect of high T_C interface layer on the thermally assisted STT switching of high T_C / low T_C hybrid memory layer
°W. Zhao¹, T. Kato¹, D. Oshima¹, S. Iwata² (¹Nagoya Univ., ²NISRI)
- 01pB-2 Computer simulation of AFC structure effect for small MTJ II
°H. Kimura, Y. Nakatani (UEC)
- 01pB-3 Zero field oscillation in spin torque oscillator
°S. Tsunegi^{1,2}, K. Yakushiji¹, A. Fukushima¹, S. Yuasa¹, H. Kubota¹ (¹AIST, ²JST-PREST)
- 01pB-4 Analysis of a spin-torque oscillator using injection locking to a microwave magnetic field
°H. Suto¹, N. Asam¹, S. Tamaru², H. Sepehri-Amin¹, A. Bolyachkin¹, W. Zhou¹, T. Nakatani¹, H. Kubota², Y. Sakuraba¹ (¹NIMS, ²AIST)

Spin orbit torque

14:15 ~ 15:15

Chair: M. Tanaka (Nagoya Inst. Tech.)

- 01pB-5 Investigation of current-induced magnetization switching in CoFeB/Tb-Fe wire for both high magnetoresistance and low operating current density
°M. Fujimoto, U. Kamihoki, Y. Kurokawa, H. Yuasa (Kyushu Univ.)
- 01pB-6 Spin-orbit torque in a Ni-Fe single layer
°T. Seki, Y. Lau, S. Iihama, K. Takanashi (Tohoku Univ.)

- 01pB-7 Antisymmetric interlayer exchange interaction in Pt/Co/Ir/Co/Pt with in-plane spatial inversion breaking
[°]H. Masuda¹, T. Seki^{1,2,3}, Y. Yamane^{4,5}, R. Modak², K. Uchida^{1,2,3},
 Jun'ichi Ieda⁶, Y. Lau^{1,3}, S. Fukami^{3,5,7,8}, K. Takanashi^{1,3,8}
 (¹IMR, Tohoku Univ., ²NIMS, ³CSRN, Tohoku Univ., ⁴FRIS, Tohoku Univ., ⁵RIEC, Tohoku Univ.,
⁶ASRC, JAEA, ⁷WPI-AIMR, Tohoku Univ., ⁸CSIS, Tohoku Univ.)
- 01pB-8 Change of spin-orbit torques with uniaxial in-plane magnetic anisotropy in Py/Pt bilayers on a single-crystal Y-cut 128°
 LiNbO₃ substrate.
[°]M. Ito¹, A. Yamaguchi², D. Oshima³, T. Kato³, M. Shima¹, K. Yamada¹ (¹Gifu Univ., ²Univ. Hyogo, ³Nagoya Univ.)

Sep. 1/Room C

- Noise suppression and shield** **9:15 ~ 10:30** Chair: M. Sato (Shinshu Univ.)
- 01aC-1 Modification of transformer coupled permeameter for wider bandwidth
[°]S. Tamaru (AIST)
- 01aC-2 Physical mechanism of bimodal complex permeability spectrum of a noise-suppression sheet
[°]T. Igarashi¹, S. Tamaru², N. Kikuchi³, S. Yoshida³, S. Okamoto³ (¹TOKIN, ²AIST, ³Tohoku Univ.)
- 01aC-3 Size dependence of complex permeability spectrum of Fe single flakes
[°]T. Onuma¹, T. Igarashi², S. Tamaru³, N. Kikuchi¹, S. Yoshida¹, S. Okamoto¹ (¹Tohoku Univ., ²TOKIN, ³AIST)
- 01aC-4 FMR frequency shift of a magnetic sheet caused by RF current crowding in transmission line
[°]M. Yamaguchi, Y. Miyazawa (Tohoku Univ.)
- 01aC-5 New EMI Shielding Layer with Magnetic Multilayer for sub-100MHz Frequency Range
[°]A. Kikitsu¹, Y. Kurosaki¹, S. Shirotori¹, A. Fujita², H. Nishigaki², S. Matsunaka² (¹Toshiba, ²Shibaura Mechatronics)

- High frequency and striction measurement** **10:45 ~ 11:45** Chair: S. Tamaru (AIST)
- 01aC-6 Evaluation of high frequency vibration characteristics of inverse magnetostrictive effect type strain sensor
[°]R. Takano¹, K. Ishiyama¹, T. Hoshi² (¹Tohoku Univ., ²Pixie Dust Technologies)
- 01aC-7 Evaluation of Measurement System for Magnetostriction of Magnetics Alloy Ribbons
[°]O. Mori¹, S. Sato¹, R. Utsumi¹, Y. Endo² (¹Toei Scientific Industrial, ²Tohoku Univ.)
- 01aC-8 Study of measurement error of ferromagnetic resonance frequency using Microstrip Line-Type Probe
[°]K. Takagi¹, T. Ishihara¹, K. Okita¹, C. Iwasaki¹, S. Yabukami¹, M. Yamaguchi¹, K. Chatani² (¹Tohoku Univ., ²TOKIN)
- 01aC-9 Circuit parameter estimation of MSL with magnetic film using magnetic circuit analysis
[°]T. Mikami, S. Muroga, M. Tanaka (Akita Univ.)

- Magnetic sensor** **13:00 ~ 14:30** Chair: K. Ishiyama (Tohoku Univ.)
- 01pC-1 Impedance change ratio of miniaturized single layer thin film MI element
[°]M. Tanii, H. Kikuchi (Iwate Univ.)
- 01pC-2 Vehicle Traffic Measurement and Vehicle Type Estimation Algorithm Using Highly Stable MI Sensor
[°]R. Yao, T. Uchiyama (Nagoya Univ.)
- 01pC-3 Analysis of coplanar line type thin film magnetic field sensor by electromagnetic field simulation
[°]T. Ishihara¹, H. Uetake², C. Iwasaki¹, S. Yabukami¹, M. Yamaguchi¹ (¹Tohoku Univ., ²DENJIKEN)
- 01pC-4 Effects of fall time of excitation pulse current on output voltage for magnetic sensor with amorphous wire
[°]T. Kaneko, F. Akagi (Kogakuin Univ.)
- 01pC-5 Output pulse voltage of Wiegand wire excited by AC magnetic field at high frequency
[°]F. Eto, T. Yamada, Y. Takemura (Yokohama National Univ.)
- 01pC-6 Receiving coils with cores using Wiegand wire and high permeability material
[°]S. Kawazoe, Y. Kawade, T. Yamada, Y. Takemura (Yokohama National Univ.)

Sep. 1/Room D

- NdFeB** **9:15 ~ 10:30** Chair: T. Nishiuchi (Hitachi Metals)
- 01aD-1 Effect of deposition temperature on anisotropy of Nd-Fe-B magnet films made by modified two-step process
[°]H. Nakajima¹, K. Furusawa¹, T. Uchida¹, K. Koike¹, H. Kato¹, N. Inaba¹, M. Itakura², Y. Saito³, S. Okubo³, H. Ota³
 (¹Yamagata Univ., ²Kyushu Univ., ³Kobe Univ.)

- 01aD-2 Change in magnetic domain structure of Nd-Fe-B sintered magnets due to combined effect of heating and compressive stress
[°]K. Tamura¹, N. Eguchi¹, Y. Morimoto¹, M. Takezawa¹, N. Matsumoto² (¹Kyushu Inst. Tech., ²MITSUBISHI)
- 01aD-3 Core-shell grain structure and coercivity in Nd-La-Ce-Fe-B magnet powders prepared by d-HDDR process
[°]R. Shimbo, M. Yamazaki, C. Mishima (Aichi Steel)
- 01aD-4 Effect of Dy substitution on the coercivity in Nd-Fe-B magnets ---atomistic model analysis---
[°]M. Nishino¹, H. Hayasaka¹, S. Miyashita² (¹NIMS, ²Univ. of Tokyo)
- 01aD-5 Study on angular dependent coercivity in Nd-Fe-B magnets by an atomistic model approach
[°]H. Hayasaka¹, M. Nishino¹, S. Miyashita^{1,2} (¹NIMS, ²ISSP)

Ferrite • Rare-earth free

10:45 ~ 12:00

Chair: T. Horikawa (Aichi Steel)

- 01aD-6 Study on the turn angle of helical magnetism in hexagonal ferrite Ba(Fe_{1-x}Sc_x)₁₂O₁₉
[°]K. Maruyama¹, S. Tanaka¹, S. Utsumi¹, R. Kiyanagi², A. Nakao³, K. Moriyama³, Y. Ishikawa³
(¹Tokyo Univ. Sci., Suwa, ²JAEA, ³CROSS)
- 01aD-7 Verification of Co site preference of La-Co-substituted M-type ferrite by first-principles calculation
[°]R. Kobayashi¹, T. Waki¹, H. Ohta², H. Ikeno³, Y. Tabata¹, H. Nakamura¹
(¹Kyoto Univ., ²Doshisha Univ., ³Osaka Pref. Univ.)
- 01aD-8 Local structure analysis of Cu_xCo_{1-x}Fe₂O₄ by XAFS measurement
[°]T. Nakagawa, M. Hisamatsu, S. Fujieda, S. Seino, T. A. Yamamoto (Osaka Univ.)
- 01aD-9 Crystal distortion due to Jahn-Teller effect and change in magnetic properties of Mn_xCoFe_{2-x}O₄
[°]H. Kashiwagi, S. Fujieda, S. Seino, T. Nakagawa (Osaka Univ.)
- 01aD-10 Novel hard magnetic compound with Zr_{11.5}Fe₅₃Si_{35.5} composition.
[°]H. Yamamoto, K. Ueda, I. Kitagawa (Hitachi)

Sep. 1/Fellow lecture Room

Fellow lecture

15:30 ~ 17:00

Chair: T. Kondo (KIOXIA)

- 01FL-1 Advance and Future of Magnetism & Optics Research
[°]N. Ota (Univ. of Tsukuba)
- 01FL-2 Perpendicular Magnetic Anisotropy of Multilayers and Ordered Alloy Films and Their Application to Recording Media
[°]S. Iwata (NISRI)
- 01FL-3 A Tricolor Flag of Research: Freedom, Forgiveness, and Insight
[°]H. Munekata (Tokyo Inst. Tech.)

Sep. 2/Room A

Magnetic imaging

9:45 ~ 10:45

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

- 02aA-1 DC magnetic field imaging of permanent magnets using an alternating magnetic force microscopy
[°]K. Miura, H. Tanaka, T. Matsumura, H. Saito (Akita Univ.)
- 02aA-2 Evaluation of magnetic field response of Co-GdOx superparamagnetic tip in microwave frequency region by alternating magnetic force microscopy
[°]S. Sato, T. Matsumura, H. Saito (Akita Univ.)
- 02aA-3 Simulation study of analysis of magnetic easy axis direction of single domain particles for magnetic imaging by alternating magnetic force microscopy
[°]K. Murakami, A. Takada, T. Matsumura, H. Saito (Akita Univ.)
- 02aA-4 Theory of DC magnetic field imaging by using an alternating magnetic force microscopy
[°]H. Saito, K. Miura, H. Tanaka, T. Matsumura (Akita Univ.)

Magneto-optical effect

11:00 ~ 12:00

Chair: S. Saito (Tohoku Univ.)

- 02aA-5 Three-dimensional distribution measurement of magnetic field vector by magneto-optical imaging
[°]H. Sakaguchi¹, S. Wada², T. Matsumura², H. Saito², T. Ishibashi¹ (¹Nagaoka Univ. Tech., ²Akita Univ.)
- 02aA-6 Evaluation method of soft magnetic materials by difference image of magnetic domain structure.
[°]R. Araki, T. Kohashi (Hitachi)

- 02aA-7 Clarification of reconstructed image in magneto-optical 3D holographic display using microlens array
[°]Y. Ito¹, S. Yamagishi¹, Y. Yamamoto¹, H. Horimai², T. Goto¹, Y. Nakamura¹, P. B. Lim¹, M. Inoue³, H. Uchida¹
 (1Toyohashi Univ. Tech., 2Holymine, 3NIT)
- 02aA-8 Development of Magnetic- Domain Imaging Techniques in Polycrystalline Materials by Scanning Transmission Electron Microscopy
[°]Y. O. Murakami¹, T. Seki¹, A. Kinoshita², T. Shoji², Y. Ikuhara^{1,3}, N. Shibata^{1,3} (1Univ. of Tokyo, 2TOYOTA Motor, 3JFCC)

Symposium "Prospects for ultra-sensitive magnetic sensor devices with sub-pico-tesla detectivity"

Chief Organizer: Y. Ando (Tohoku Univ.)

13:00 ~ 14:30

Chair: H. Iwasaki (NIMS)

- 02pA-1 Development of highly sensitive TMR based sensor
[°]M. Oogane¹, K. Fujiwara², S. Kumagai², H. Matsuzaki², Y. Ando¹ (1Tohoku Univ., 2Spin Sensing Factory Corp.)
- 02pA-2 High sensitive magnetic sensor using symmetric response GMR
[°]Y. Higashi, A. Kikitsu, Y. Kurosaki, S. Shirotori (Toshiba)
- 02pA-3 New model of FM-OFG magnetometer with 1-pT noise floor
[°]I. Sasada (Kyushu Univ.)

14:45 ~ 16:45

Chair: T. Nakatani (NIMS)

- 02pA-4 Development of highly sensitive magnetoimpedance sensor system towards for sub-pico-tesla resolution
[°]T. Uchiyama, J. Ma (Nagoya Univ.)
- 02pA-5 High-frequency drive type thin film sensor using coplanar line type structure and for biomedical application
[°]S. Yabukami (Tohoku Univ.)
- 02pA-6 Diamond quantum sensor towards robust biosensing
[°]Y. Masuyama (QST)
- 02pA-7 Approaches to noise reduction of optically pumped magnetometers
[°]Y. Ito, T. Kobayashi (Kyoto Univ.)

Sep. 2/Room B

Thin film and layered materials

13:00 ~ 14:45

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

- 02pB-1 Temperature Dependence of Specific Heat of EuSn₂As₂, a 2D Antiferromagnetic Compound
[°]W. Lee, R. Sakagami, K. Hirata, M. Matoba, Y. Kamihara (Keio Univ.)
- 02pB-2 Structure and magnetic properties of metal-ordered NiAs-type pnictides
[°]T. Murakami¹, S. Saito¹, H. Kageyama² (1Tohoku Univ., 2Kyoto Univ.)
- 02pB-3 Detection of the Morin transition in impurity doped hematite films using spin Hall magnetoresistance
[°]M. Tanaka, K. Yokoyama, K. Ishii, K. Fujii, A. Furuta, K. Mibu (Nagoya Inst. Tech.)
- 02pB-4 Fabrication of CoCrPt-based magnetic/electric force microscope tip and observation of domain structure of ferromagnetic/ferroelectric thin films using the tip
[°]G. Egawa, R. Hosoya, N. Oshita, S. Yoshimura (Akita Univ.)
- 02pB-5 Magnetic properties and crystal structures of organic-inorganic layered cinnamoyl cobalt hydroxides
[°]K. Saito¹, K. Ichimura¹, A. Yasuta¹, T. Kida², M. Hagiwara², Z. Honda¹ (1Saitama Univ., 2Osaka Univ.)
- 02pB-6 Magnetic Characteristics of Iron-based Superconductor SmFeAsO_{0.77}H_{0.14}
[°]T. Kawamatsu, R. Hotchi, M. Matoba, Y. Kamihara (Keio Univ.)
- 02pB-7 Synthesis of polycrystalline EuSn₂P₂
[°]Z. Liu, R. Sakagami, Y. Kamihara (Keio Univ.)

Magnetic domain observation and magneto-optics

15:00 ~ 16:45

Chair: J. Okabayashi (Univ. of Tokyo)

- 02pB-8 Analysis of magnetic and mechanical mechanisms of ferromagnetic shape memory alloys based on extended free energy model
[°]S. Sato¹, Ryohei Sen'it¹, A. L. Foggiatto¹, K. Masuzawa¹, C. Mitsumata², M. Kotsugi¹ (1Tokyo Univ. Sci., 2NIMS)

- 02pB-9 Analysis of the coercivity mechanism of YIG based on the extended Landau free energy model
^oK. Masuzawa¹, S. Kunii¹, S. Sato¹, A. L. Foggiatto¹, C. Mitsumata², M. Kotsugi¹ (¹Tokyo Univ. Sci., ²NIMS)
- 02pB-10 Classification of magnetization reversal process and extraction of hidden parameter using persistent homology
^oS. Kunii¹, F. L. Alexandre¹, C. Mitsumata², M. Kotsugi¹ (¹Tokyo Univ. Sci., ²NIMS)
- 02pB-11 Characterization of cobalt ferrite thin films by magneto-optical spectroscopy
^oS. Wang¹, M. Nishikawa¹, H. Yanagihara², T. Ishibashi¹ (¹Nagaoka Univ. Tech., ²Univ. of Tsukuba)
- 02pB-12 Magneto-optical effect in nanogranular films with epsilon near zero matrix
 <authors>^oK. Ikeda¹, T. Liu², Y. Ota³, S. Iwamoto^{2,4}, N. Kobayashi¹
 (¹DENJIKEN, ²RCAT, Univ. of Tokyo, ³Keio Univ., ⁴IIS. Univ. of Tokyo)
- 02pB-13 Polar Kerr activities on surface plasmon system consisting of CoPt perpendicular magnetic films
^oH. Yamane¹, S. Yanase¹, M. Kobayashi², Y. Yasukawa² (¹AIT, ²Chiba Inst. Tech.)
- 02pB-14 The dynamic magnetization of Bi:YIG thin film by measurement of Faraday effect
^oS. Yoshida, T. Takase, K. Yamaguchi (Fukushima Univ.)

Sep. 2/Room C

Magnetostriction and vibration power generation 9:15 ~ 10:30 Chair: K. Fujisaki (Toyota Tech. Inst.)

- 02aC-1 Study of vibration power generation using ferromagnetic superelastic alloy
^oK. Ozawa, S. Hashi, K. Ishiyama (Tohoku Univ.)
- 02aC-2 Magnetic flux density change of grain-oriented electromagnetic steel on vibration power generation device
^oS. Fujieda¹, T. Okada¹, S. Hashi², K. Ishiyama³, S. Suzuki³, S. Seino¹, T. Nakagawa¹, T. A. Yamamoto¹
 (¹Osaka Univ., ²Tohoku Gakuin Univ., ³Tohoku Univ.)
- 02aC-3 Design of nanocrystalline soft magnetic material with large magnetostriction
^oK. Sano¹, T. Tomita², C. Oka¹, J. Sakurai¹, T. Yamazaki¹, S. Hata¹ (¹Nagoya Univ., ²TMI)
- 02aC-4 Effects of local magnetostriction in nanocrystalline soft magnetic materials
^oH. Tsukahara^{1,2}, H. Imamura², C. Mitsumata³, K. Suzuki⁴, K. Ono^{1,5} (¹KEK, ²AIST, ³NIMS, ⁴Monash Univ., ⁵Osaka Univ.)
- 02aC-5 Structural, Magnetic, and Magnetostrictive Properties of Fe-Co Alloy Films Prepared by Electroplating
^oY. Nakamura¹, S. Aketa¹, H. Kondo¹, M. Ohtake¹, T. Kawai¹, M. Futamoto¹, F. Kirino², N. Inaba³
 (¹Yokohama National Univ., ²Tokyo Univ. of Arts, ³Yamagata Univ.)

Processing for soft magnet materials 10:45 ~ 12:00 Chair: T. Sato (Shinshu Univ.)

- 02aC-6 Influence of Annealing Temperature on Structure and Magnetic Properties of Pure Fe Ribbons
 Y. Endo¹, ^oX. Ma¹, R. Umetsu¹, T. Miyazaki¹, S. Mikami², T. Hiraki² (¹Tohoku Univ., ²TOHO ZINC)
- 02aC-7 Magnetic characteristics of pure iron thin film manufactured by planer flow casting and cold rolling process
^oJ. Tanase¹, T. Uemura^{1,2}, E. Tsuchida², T. Takeuchi¹, K. Fujisaki¹ (¹Toyota Tech. Inst., ²Maruyoshi Kogyo)
- 02aC-8 Magnetic Properties and Reliability of Fe-Based Nano-crystalline Materials by Heat Treatment in Magnetic Field
^oH. Sakuma¹, S. Yazawa¹, H. Watanabe², K. Niizuma¹ (¹Nihon Univ., ²TOSEI INDUSTRIAL)
- 02aC-9 Synthesis of interstitial co-addition α'' -Fe₁₆(N, C)₂ particles - Proposal of the synthesis method for new Fe-based interstitial compound by gas-solid reactions
^oM. Tobise¹, Y. Nomura², M. Kodama², S. Saito¹ (¹Tohoku Univ., ²TAIYO NIPPON SANSO)
- 02aC-10 Synthesis of Fe-Mn alloy nanoparticles using metal carbonyl mixed precursor and its magnetic properties
 T. Ogawa, ^oT. Yoshida, S. Saito (Tohoku Univ.)

Film and composite soft magnet materials 13:00 ~ 14:00 Chair: S. Fujieda (Osaka Univ.)

- 02pC-1 Temperature dependence of the FMR spectra of Ferromagnetic Zinc Ferrite
^oN. Adachi, K. Naniwa, Y. Nakata, K. Sinkai (Nagoya Inst. Tech.)
- 02pC-2 Structural and Magnetic Properties of Fe-B-N Alloy Films Formed on MgO(001) Single-Crystal Substrates
^oY. Maeda¹, K. Imamura¹, M. Ohtake¹, T. Kawai¹, M. Futamoto¹, F. Kirino², N. Inaba³
 (¹Yokohama National Univ., ²Tokyo Univ. of Arts, ³Yamagata Univ.)
- 02pC-3 Fabrication and evaluation of Fe based nanocrystalline sphere powder composite core
^oS. Kimura, N. Kawada, M. Sonehara, T. Sato (Shinshu Univ.)

- 02pC-4 CoZrO nanogranular films for high frequency operation prepared by facing targets sputtering
^oK. Kawahara¹, T. Kaneko¹, T. Yasuda², J. Tanase², Y. Takamura¹, K. Fujisaki², S. Nakagawa¹
 (¹Tokyo Inst. Tech., ²Toyota Tech. Inst.)

Sep. 2/Room D

- High anisotropy films** **9:00 ~ 10:30** Chair: Y. Shiratsuchi (Osaka Univ.)
- 02aD-1 Fabrication of variant-free (110)-oriented L1₀-FeNi films by a denitrating method
^oT. Ichimura¹, K. Ito¹, T. Nishio², H. Kura², H. Yanagihara³, K. Takanashi¹ (¹Tohoku Univ., ²DENSO, ³Univ. of Tsukuba)
- 02aD-2 First-principles calculations of magnetic anisotropy constant in Fe₂Ni₂C and Fe₂Ni₂N
^oY. Kota¹, A. Sakuma² (¹NIT, Fukushima Coll., ²Tohoku Univ.)
- 02aD-3 High Through-put Exploration and Fabrication of Large Magnetic Anisotropy Materials Using Machine Learning
^oD. Furuya¹, T. Nakao¹, H. Saito¹, K. Uda¹, Y. Miura², M. Kotsugi¹ (¹Tokyo Univ. Sci., ²NIMS)
- 02aD-4 Ordering of CoPt in CoPt multilayer thin films on Al₂O₃(0001) single-crystal substrates
^oR. Toyama¹, S. Kawachi^{2,3,4}, J. Yamaura^{2,3}, Y. Murakami³, H. Hosono², Y. Majima^{1,2}
 (¹MSL, Tokyo Tech, ²MCES, Tokyo Tech, ³IMSS, KEK, ⁴Graduate School of Science, Univ. of Hyogo)
- 02aD-5 Influence of Film Thickness on the Structural and Magnetic Properties of Epitaxial Mn-Al Alloy Thin Films
^oS. Noro¹, K. Nakano¹, M. Ohtake¹, M. Futamoto¹, T. Kawai¹, F. Kirino², N. Inaba³
 (¹Yokohama National Univ., ²Tokyo Univ. of Arts, ³Yamagata Univ.)
- 02aD-6 Effect of surface free energy on the growth mode of FePt epitaxial thin films
^oI. Suzuki, H. Sepehri-Amin, Y. K. Takahashi, K. Hono (NIMS)

- Surface and Interface** **10:45 ~ 12:00** Chair: I. Suzuki (NIMS)
- 02aD-7 Biquadratic magnetic coupling dependence on material of spacer and temperature
^oC. Liu, N. Hashimoto, S. Horiike, Y. Kurokawa, H. Yuasa (Kyushu Univ.)
- 02aD-8 Influence of antiferromagnetic ordering on exchange bias and superparamagnetic blocking temperature in ferromagnetic/antiferromagnetic thin film
^oY. Shiratsuchi, Y. Tao, K. Toyoki, R. Nakatani (Osaka Univ.)
- 02aD-9 The effects of optical interference layer thickness on photo-excited ultrafast magnetization response
^oT. Takahashi, D. Tajima, H. Yoshikawa, A. Tsukamoto (Nihon Univ.)
- 02aD-10 Electrical conductivity measurements of NiFe-Cu nanocubes with ferromagnetic probes
^oH. Sakuma¹, R. Takeuchi¹, H. Sakakura², M. Takeda², S. B. Trisnanto², S. Ota³, Y. Takemura²
 (¹Utsunomiya Univ., ²Yokohama National Univ., ³Shizuoka Univ.)
- 02aD-11 STM and UPS study of Organic Molecule - Magnetic Metal Hetero Structures
^oT. K. Yamada (Chiba Univ.)

- Granular and Nanoparticles** **13:00 ~ 14:15** Chair: Y. Endo (Tohoku Univ.)
- 02pD-1 Faraday effect of (Fe-Pt, Co-Pt)-fluoride nanogranular films
^oN. Kobayashi, T. Iwasa, K. Ikeda, K. Arai (DENJIKEN)
- 02pD-2 Shape effect of granule of lateral nanogranular films on ferromagnetic and superparamagnetic properties
^oH. Aoki¹, K. Uchikoshi¹, S. Ohnuma^{1,2}, N. Kobayashi², H. Masumoto¹ (¹Tohoku Univ., ²DENJIKEN)
- 02pD-3 Development of strain sensor with granular film 2
^oS. Ueno¹, K. Temma¹, T. Uwabe¹, Y. Fujiwara¹, D. Oshima², T. Kato², M. Jimbo³ (¹Mie Univ., ²Nagoya Univ., ³Daido Univ.)
- 02pD-4 Mössbauer study and magnetic relaxation of frozen magnetic fluid
^oE. Kita^{1,2}, R. Onodera², M. Kishimoto¹, H. Yanagihara¹ (¹Univ. of Tsukuba, ²NIT, Ibaraki Coll.)
- 02pD-5 Analysis of magnetic vortex formation of cubic Fe₃O₄ submicron particles by FORCs method
^oE. Nomura¹, S. Kobayashi¹, C. Noda¹, J. Manjanna² (¹Iwate Univ., ²Rani Channamma Univ.)

- Alloy** **14:30 ~ 15:45** Chair: H. Aoki (Tohoku Univ.)
- 02pD-6 The evaluation of crystal structure and Néel temperature of C11_b Cr₂Al thin films
^oK. Toyoki, S. Hamaguchi, Y. Shiratsuchi, R. Nakatani (Osaka Univ.)

- | | |
|---------|---|
| 02pD-7 | Epitaxial Growth of Fe-N Thin Films on MgO and SrTiO ₃ Single-Crystal Substrates of (001) Orientation
°K. Imamura ¹ , Y. Maeda ¹ , M. Ohtake ¹ , M. Futamoto ¹ , T. Kawai ¹ , F. Kirino ² , N. Inaba ³
(¹ Yokohama National Univ., ² Tokyo Univ. of Arts, ³ Yamagata Univ.) |
| 02pD-8 | Structural and Magnetic Properties of Co-Ni Alloy Films Prepared by Electroplating
°S. Aketa ¹ , Y. Nakamura ¹ , H. Kondo ¹ , M. Ohtake ¹ , T. Kawai ¹ , M. Futamoto ¹ , F. Kirino ² , N. Inaba ³
(¹ Yokohama National Univ., ² Tokyo Univ. of Arts, ³ Yamagata Univ.) |
| 02pD-9 | Dependence of structure and static and dynamic magnetic properties of Fe-Ga-C thin films on C composition
°S. Muramatsu, T. Miyazaki, Y. Endo (Tohoku Univ.) |
| 02pD-10 | Study on Static and Dynamic Magnetic Properties of Co-Fe-B Thin Film with Various Co Compositions
H. Tanaka ¹ , T. Miyazaki ¹ , S. Hashi ² , °Y. Endo ¹ (¹ Tohoku Univ., ² Tohoku Gakuin Univ.) |

CFM-iVTI 無冷媒超伝導マグネットシステム

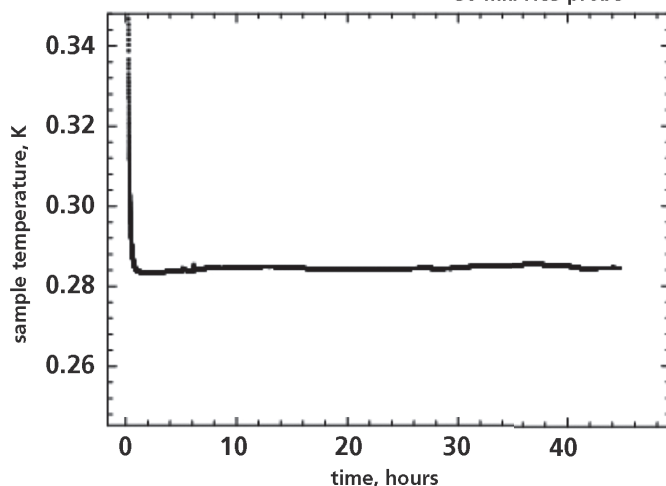


仕 様

- 磁場強度：±5T～±18T
- 磁場均一度：
磁場中心 $\phi 10\text{mm}$ 球内で0.1% (標準)
- サンプル冷却方法：
熱交換ガスフロー (アクティブガス)
又は静的熱交換ガス (スタティックガス)
- サンプル温度：
1.5K～375K (アクティブガス)
1.8K～375K (スタティックガス)
- VTI 内径：30mm 又は 50mm
- 自動制御ニードルバルブ

He-3 インサート保持時間

30-mm He3 probe



自動制御機能

- 磁場制御
- サンプル温度制御
- 熱交換ガス流量制御

オプション

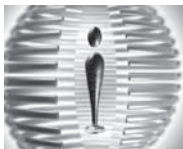
- He-3 インサート
(300mK～300K)
- 700K 高温インサート
- サンプル回転機構

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New model for higher magnetic field and higher sensitivity measurements, ideal for measuring ultra-thin films in the nm range.

Features

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



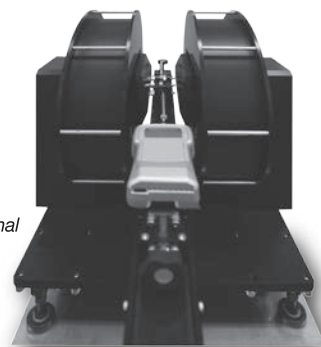
The magnetostriction measuring equipment

Under Development!

The magnetostriction measuring equipment for thin magnetic strips under 60um thickness.

Features

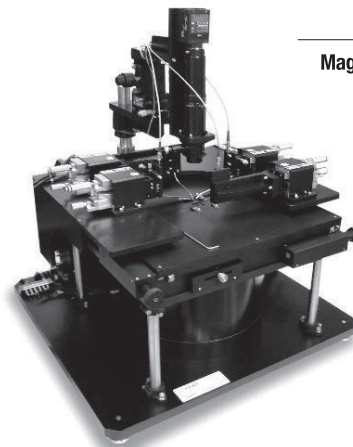
Provide higher accuracy and resolution than the conventional strain gauge method equipment.



Omni-Directional Magnetic Field Prober



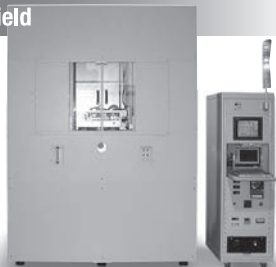
Longitudinal and Perpendicular Magnetic Field Prober



Main Products

Magnetoresistance measurement system
TMR measurement system
Full-automatic prober
Semi-automatic prober
Manual prober
Probe card

Furnaces with Magnetic Field



3D Magnetic Field Profiler



Micro Strip Line Probe



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.

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

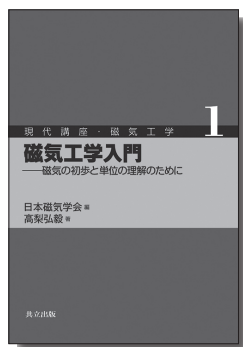
Head Office 8-29, 4-chome, Tomizawa, Taihaku-ku, Sendai, 982-0032 Japan TEL: +81-22-743-3221, FAX: +81-22-743-3235

<http://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……………続 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。重要なトピッ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—

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富田知志・澤田 桂著……………224頁・定価2750円

スピンと磁気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……………続 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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Journal of The Magnetics Society of Japan (CDおよびオンライン発行)

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日本磁気学会 研究会資料

第221回	2019年1月24日	回転機用磁性材料の技術と応用
第222回	2019年3月18日	TMR磁気センサの製品応用に向けた開発と次世代磁気検出技術の進展
第223回	2019年5月21日	磁性分野におけるマテリアルズインフォマティクスの現状
第224回	2019年7月29日	磁気キャパシタンス効果の新展開
第225回	2019年11月15日	超伝導応用最前線
第226回	2020年1月17日	スピン × センサ × IoT
第227回	2020年9月28日	X線とレーザーの融合による磁性ダイナミクス
第228回	2020年10月26日	磁気計測を利用した非破壊検査技術とインフラ診断応用
第229回	2020年11月11日	テラヘルツ領域におけるスピントロニクス研究の現状と展望
第230回	2020年12月22日	高度スマートグリッドシステム実現のための磁気センサ技術
第231回	2021年3月30日	磁気が拓くイノベーション
第232回	2021年5月12日	磁場の時空間制御と弱磁性物質への応用

日本磁気学会 学術講演会概要集

第43回	2019年9月25日～27日 京都大学
第44回	2020年12月14日～17日 オンライン開催

上記資料(～最新号まで)について、ご入用の方はFAXまたはE-mailにより事務局までお問い合わせ下さい。
 折返し、在庫の有無と価格(送料別途実費)をお知らせします。
 ※代金は先払いです。

日本磁気学会事務局 FAX: 03-5281-0107, E-mail: msj@bj.wakwak.com

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主な製品ラインナップ

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- 窒素、酸素RFプラズマ源
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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
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- 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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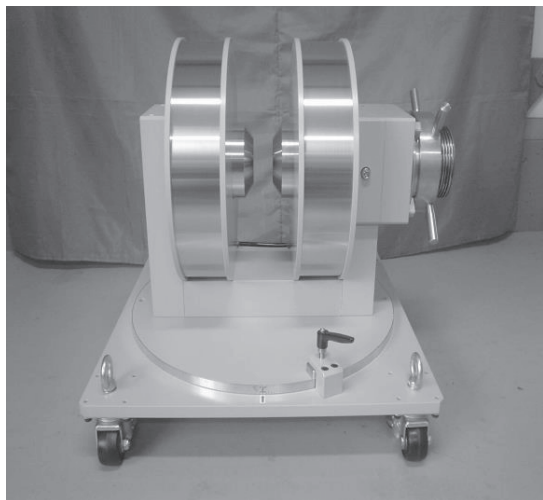
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電磁石 ヘルムホルツコイル等 設計製作

各種の電磁石を設計製造しております。

電磁石専用電源（バイポーラ、ユニポーラ）も用意しております。



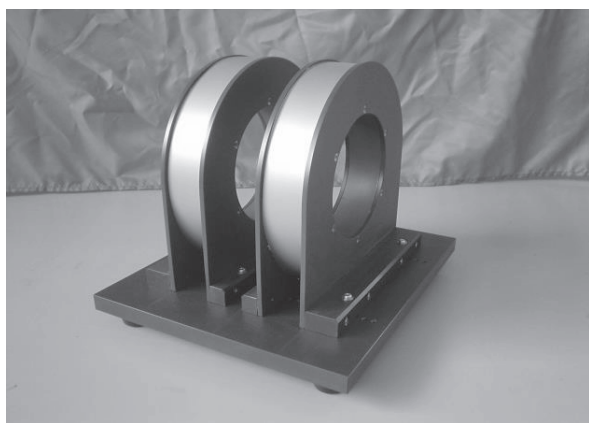
回転台付 片側可変電磁石



片側可変電磁石

ヘルムホルツコイルその他各種コイルを設計製造いたしております。

中空銅線を使用したコイルも製作可能です。



ヘルムホルツコイル



3Dヘルムホルツコイル

* その他の製品についてもお気軽にお問合せください

有限会社 ハヤマ

〒960-8201 福島県福島市岡島字獅子田 1-1

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<https://www.kagaku.com/hayama/>

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

雑音指数

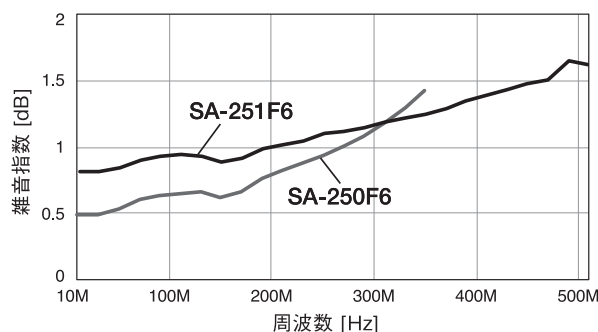
(ノイズフィギュア)

周波数帯域

0.9dB / 1 kHz ~ 500 MHz

0.6dB / 100 Hz ~ 250 MHz

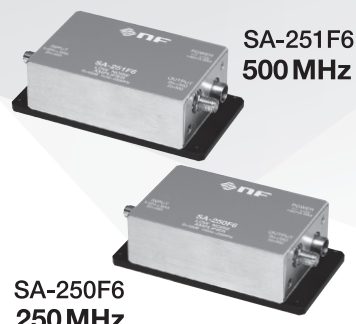
■世界最高レベルの低雑音特性



■豊富なモデル

周波数帯域、入力形式、入力インピーダンスによって、11種類をラインナップ

2機種新登場



Application

- NMR 用電磁波センサ
- 量子コンピュータにおける超電導デバイス
- SQUID センサ

電流アンプ

利得

100G (V/A)

周波数帯域

DC ~ 2kHz

■最高100G (V/A) 高利得と広帯域を両立

10M/100M/1G/10G/100G (V/A) の5種類の利得をラインナップ

■センサ・接続ケーブルの容量に対して安定

■低雑音 ■ローパスフィルタ出力装備

新登場



Application

- フォトダイオード、磁気ピックアップの出力増幅
- 電子顕微鏡／走査型電子顕微鏡の検出器として

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

テクニカルセミナー Online

微小信号測定のコツや測定器の使いこなしなど、さまざまなテーマをオンラインでわかりやすく解説。

▶ 詳細は www.nfcorp.co.jp

世界初! 高温超電導型VSM

新製品

TOEI

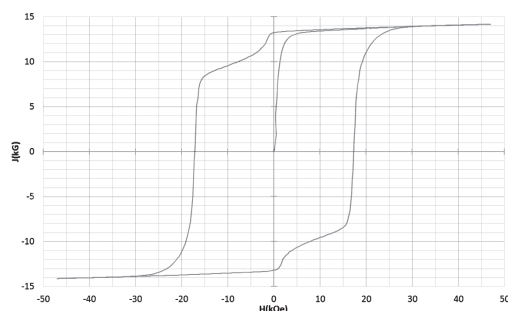
世界初*、高温超電導マグネットをVSMに採用することで
測定速度 当社従来機 1/20 を実現。

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

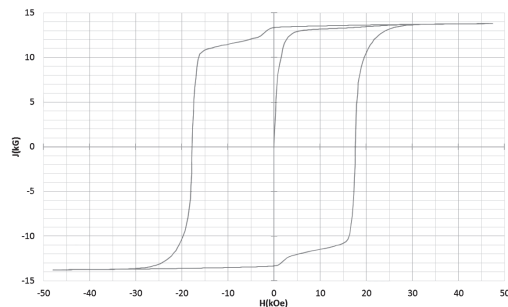


磁化測定レンジ: 0.2emu

Br = 13.2 kG

HcJ = 17.2 kOe

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

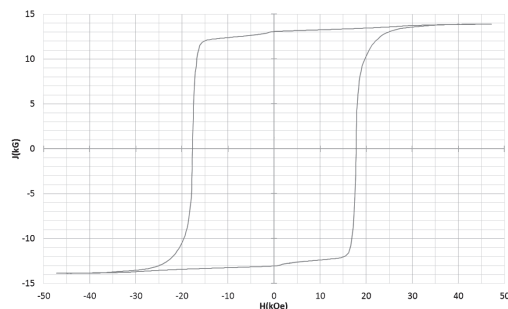


磁化測定レンジ: 2emu

Br = 13.3 kG

HcJ = 17.7 kOe

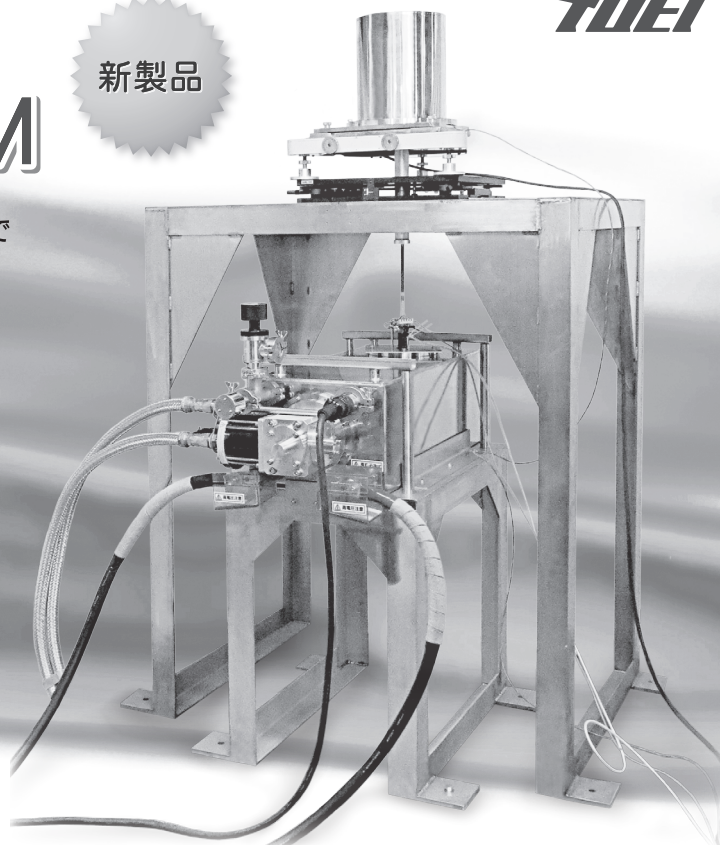
高温超電導VSMによるNdFeB(sint.) 4mm cube BHカーブ



磁化測定レンジ: 100emu

Br = 13.1 kG

HcJ = 17.8 kOe



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℃ ~ +200℃ 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

最大磁界発生±2. 7T 250℃温度測定対応 B-Hカーブトレーサ

▶最大磁界発生±2. 7T

▶室温～250℃温度可変対応:

室温～250℃まで温度制御精度±0. 5%

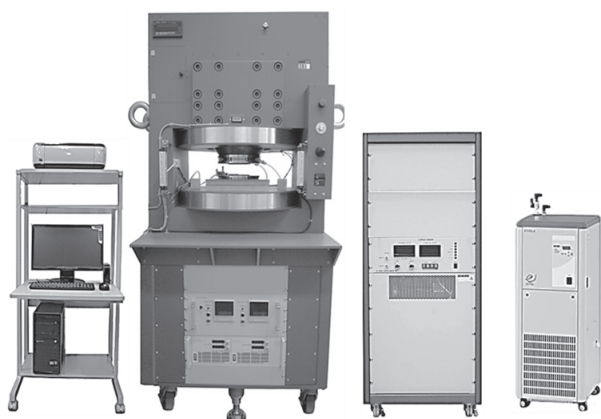
磁極直接温度可変

-40℃からも対応可能

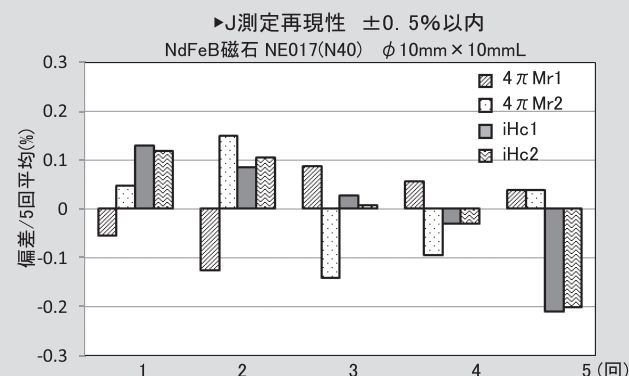
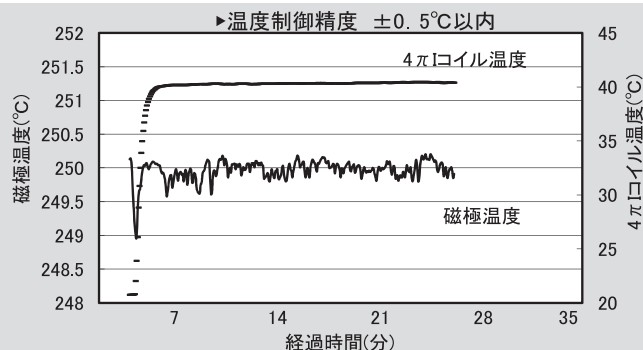
▶安定した測定再現性:

J測定再現性±0. 5%

▶磁極間隔電導可変で扱いやすく、 サンプルデータの管理がしやすい装置



▶2. 7T発生250℃温度測定可能 B-Hカーブトレーサ構成例
同タイプ常設デモ機有 サンプル測定可能

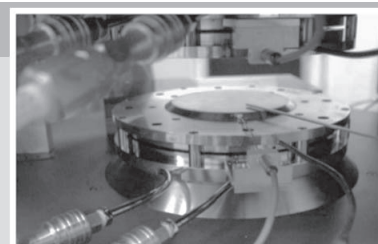


ー玉川製作所製B-Hカーブトレーサの特長ー

電磁石メーカーの強みを活かし、装置由来の測定誤差を最小限に抑えたB-Hカーブトレーサに特化した電磁石を開発し、高再現性を実現。

温度制御装置は室温測定同様にサンプルを電磁石磁極へ直接のはさみ込みを可能とし、反磁界の影響を受けにくい測定が可能。

電磁石用電源は各象限間の掃引が極めてスムーズに行えるバイポーラ直流定電流電源、積分器はドリフトが少なく、また経時的変化に強く管理を行いやすいLakeShore製480型を採用。

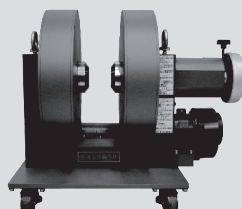


温度測定用磁極

電磁石

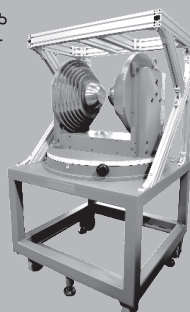
オーダーメイド品を得意としております、磁界発生装置をご検討の際は御気軽にご相談ください。
実験用途に合わせた電磁石および超電導コイルの製作を行います、ご要望をお聞かせください。

発生磁界: 1. 2T(Gap10mm)
空冷式で冷却水不使用
連続通電可能



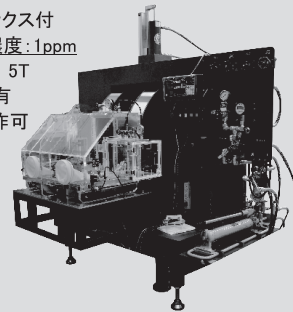
▶横型片可変式電磁石
立て型や両可変式に変更可能

磁極にスリットや
孔開け加工も可



▶特殊型電磁石(回転台付)
X線やKerr効果測定に最適

グローブボックス付
酸素濃度: 1ppm
発生磁界: 2. 5T
常設デモ機有
サンプル試作可



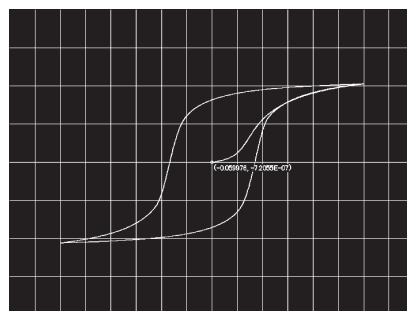
▶磁場中成形油圧プレス機用電磁石
低酸素・高磁界にて磁性粉成形が可能

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



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。

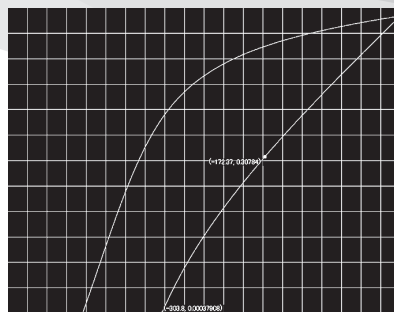
BH-1000



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。