

# PROGRAM

## Sep. 2/Room A

- Magnetic Recording Media** Chair: A. Tsukamo (Nihon Univ.)  
13 : 00 ~ 14 : 15
- 2pA-1 Accurate control of c-plane orientation of FePt alloy thin film with  $L1_0$  structure parallel to the surface  
°M. Ohtake, A. Itabashi, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 2pA-2 Large grain size of Cr seed layer deposited on CrTi amorphous layer for future high  $K_u$  FePt-C granular medium  
°S. J. Jeon, S. Hinata, S. Saito, M. Takahashi (Tohoku Univ.)
- 2pA-3 Microstructure control of FePt-C by poly crystalline MgO underlayer  
°T. Shiroyama, B. S. D. Ch. S. Varaprasad, Y. Takahashi, K. Hono (NIMS)
- 2pA-4 Effect of MgO seed layer misorientation on the texture and magnetic property of FePt-C granular film  
°J. Wang, S. Hata\*, B. S. D. Ch. S. Varaprasad, H. Sepehri-Amin, Y. Takahashi, T. Shiroyama, K. Hono (NIMS, \*Kyushu Univ.)
- 2pA-5 Mechanism of coercivity enhancement by Ag addition in FePt-C granular media for heat assisted magnetic recording  
°B. S. D. Ch. S. Varaprasad, Y.K. Takahashi, J. Wang, T. Ina\*, T. Nakamura\*, W. Ueno\*, K. Nitta\*, T. Uruga\*, K. Hono (NIMS, \*JASRI/SPring-8)

- Hybrid Recording Media I** Chair: T. Kanbe (SEL)  
14 : 30 ~ 15 : 45
- 2pA-6 Fabrication of perpendicular magnetized FePt nano-dot by dry etching with nano-silica particle mask  
°K. Iida, J. Tsukioka, A. Tsukamoto, A. Itoh (Nihon Univ.)
- 2pA-7 Improvement of magnetic properties of  $L1_0$ -FeCuPt isolated grain by additional annealing  
°J. Tsukioka, A. Tsukamoto, A. Itoh (Nihon Univ.)
- 2pA-8 Increase of surface coverage and areal density of isolated FeCuPt grain by multistep particle formation with rapid thermal annealing and rapid cooling process  
°A. Ogasawara, J. Tsukioka, M. Kato, A. Tsukamoto (Nihon Univ.)
- 2pA-9 Magnetic properties of atomic layer stacking Co/Pt films sputter deposited at room temperature  
°N. Honda, T. Tsuchiya, H. Uchida (Tohoku Inst. Tech.)
- 2pA-10 Post-annealing effect on magnetic properties and microstructures of CoPt —  $WO_3$  granular media  
°K. K. Tham, S. Hinata\*\*\*, S. Saito\*, M. Takahashi\* (TANAKA, \*Tohoku Univ., \*\*JSPS)

- Hybrid Recording Media II** Chair: M. Ohtake (Chuo Univ.)  
16 : 00 ~ 17 : 15
- 2pA-11 Development of Kerr microscopy for the observation of magnetization dynamics in frequency domain  
°S. Tamaru, H. Kubota, K. Yakushiji, A. Fukushima, S. Yuasa (AIST)
- 2pA-12 Low magnetic damping in  $L1_0$ -FePd thin films with a large perpendicular magnetic anisotropy  
°S. Iihama, S. Mizukami\*, H. Naganuma, M. Oogane, T. Miyazaki\*, Y. Ando (Tohoku Univ., \*WPI-AIMR)
- 2pA-13 Effective damping factor for CoPtCr-SiO<sub>2</sub> medium with partially switched magnetic domains  
°S. Hinata\*\*\*, S. Saito\*, M. Takahashi\*, M. Sahashi\* (\*Tohoku Univ., \*\*JSPS)
- 2pA-14 Effect of microwave assisted switching on switching field distribution of CoPtCr-SiO<sub>2</sub> medium  
°S. Hinata\*\*\*, S. Saito\*, M. Takahashi\*, M. Sahashi\* (\*Tohoku Univ., \*\*JSPS)
- 2pA-15 Anisotropy constant required for thermally assisted magnetic recording  
°T. Akao, Y. Isowaki, T. Kobayashi, Y. Fujiwara (Mie Univ.)

## Sep. 2/Room B

- Rare Earth Magnet I** Chair: R. Goto (Tohoku Univ.)  
9 : 15 ~ 10 : 30
- 2aB-1 Magnetic properties of Sm-Fe-N magnets  
°T. Saito (Chiba Inst. Tech.)
- 2aB-2 Structural characterization of  $RCo_5$  ordered alloy epitaxial thin films with in-plane magnetic anisotropies  
°Y. Hotta, M. Yamada, A. Suzuki, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)

- 2aB-3 Preparation of epitaxial  $R\text{Co}_5$  ordered alloy thin films on Cu(111) underlayers  
 °M. Yamada, Y. Hotta, A. Suzuki, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\*  
 (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 2aB-4 Improvement in magnetic properties of PLD-made Sm-Co/ $\alpha$ -Fe multi-layered nanocomposite film-magnets due to suppression of droplets  
 °S. Makihara, A. Tou, T. Yanai, M. Nakano, H. Fukunaga (Nagasaki Univ.)
- 2aB-5 Magnetic properties of Fe-based nano-particles prepared by arc-plasma deposition  
 °M. Matsuura, T. Yamamoto, N. Tezuka, S. Sugimoto (Tohoku Univ.)

### Rare Earth Magnet II

10 : 45 ~ 12 : 00

Chair: H. Kato (Yamagata Univ.)

- 2aB-6 Preparation and magnetic properties of NdFe and NdFe<sub>12</sub>N<sub>x</sub> thin film °Y. Hirayama, Y. Takahashi, K. Hono (NIMS)
- 2aB-7 Coercivity enhancement of bulk hot-deformed Nd-Fe-B magnets by the eutectic grain boundary diffusion process using Nd<sub>60</sub>Dy<sub>10</sub>Cu<sub>30</sub> alloy  
 °L. Liu\*\*\*, H. Sepehri-Amin\*\*, T. Akiya\*\*, T. Ohkubo\*\*, A. Hattori\*\*\*, K. Hioki\*\*\*, K. Hono\*  
 (\*Univ. Tsukuba, \*\*NIMS, \*\*\*Daido Steel)
- 2aB-8 Microstructure and coercivity of Tb<sub>4</sub>O<sub>7</sub> grain boundary diffusion processed sintered (Nd,Dy)-Fe-B magnets  
 °U. Seelam\*, J. Liu\*\*, T. Ohkubo\*, H. Nakamura\*\*\*, K. Hono\*,\*\* (\*NIMS, \*\*Univ. Tsukuba, \*\*\*ShinEtsu)
- 2aB-9 Temperature dependence of post-sintered annealing on magnetic properties of intergranular phase in Nd-Fe-B permanent magnet  
 °A. Yasui, T. Nakamura, Y. Kotani, T. Fukagawa\*, T. Nishiuchi\*, S. Hirosawa\*\* (JASRI/SPring-8, \*Hitachi Metal, \*\*NIMS)
- 2aB-10 Evaluation of demagnetization of Nd-Fe-B sintered magnet by motor drive load  
 °S. Ikeda, K. Fujiwara, Y. Morimoto, M. Takezawa, H. Kabashima\* (Kyushu Inst. Tech., \*MAZDA)

### Symposium “Frontier of permanent magnetic materials for energy-efficient motors —MSJ, MagHEM and ESICMM joint symposium—”

Chief Organizer: S. Hirosawa (NIMS)

13 : 30 ~ 15 : 00

Chair: K. Ozaki (AIST)

- 2pB-1 Synchrotron radiation analysis of structure and magnetism of grain boundary phase in Nd-Fe-B sintered magnet  
 °T. Nakamura, A. Yasui, W. Ueno, N. Tsuji, T. Ohkubo\*, H. Iwai\*, T. Akiya\*, Y. Kotani, T. Fukagawa\*\*, T. Nishiuchi\*\*,  
 Y. Gohda\*\*\*, K. Hono\*, S. Hirosawa\* (JASRI/SPring-8, \*NIMS, \*\*Hitachi Metals, \*\*\*Univ. Tokyo)
- 2pB-2 Effect of grain size reduction of Nd-Fe-B sintered magnet on temperature coefficient of coercivity  
 °Y. Une, H. Kubo, T. Mizoguchi, T. Iriyama, M. Sagawa, M. Nakamura\*, M. Matsuura\*, S. Sugimoto\*  
 (Intermetallics, \*Tohoku Univ.)
- 2pB-3 Low eutectic temperature alloy diffusion process for hot-deformed Nd-Fe-B magnet  
 °T. Akiya\*, H. Sepehri-Amin\*, J. Liu\*\*\*, L. Liu\*\*\*, T. Ohkubo\*, K. Hioki\*\*\*, A. Hattori\*\*\*, K. Hono\*\*\*  
 (\*NIMS, \*\*Univ. Tsukuba, \*\*\*Daido Steel)

15 : 15 ~ 17 : 15

Chair: M. Matsuura (Tohoku Univ.)

- 2pB-4 Magnetic domain structure observation of Dy free hot-deformed Nd-Fe-B magnet  
 °K. Hioki, A. Hattori, T. Iriyama (Daido Steel)
- 2pB-5 Observation of magnetic domain reversals in Nd-Fe-B hot-deformed and infiltrated magnets by SANS  
 °M. Yano, T. Ueno\*, K. Saito\*\*, K. Ono\*\*, M. Harada\*\*\*, A. Manabe, T. Shoji, N. Sakuma, A. Kato, U. Keidering\*\*\*\*  
 (TOYOTA motor, \*NIMS, \*\*KEK, \*\*\*TOYOTA Central R&D Labs., \*\*\*\*HZB)
- 2pB-6 Large-scale micromagnetic simulation of reversal processes in Nd-Fe-B magnets  
 °A. Furuya, J. Fujisaki, K. Shimizu, T. Tanaka, T. Ataka, Y. Uehara, H. Oshima\*, T. Ohkubo\*\*, S. Hirosawa\*\*, K. Hono\*\*  
 (Fujitsu, \*Fujitsu Labs., \*\*NIMS)
- 2pB-7 Anisotropy inducement mechanism in hydrogen disproportionation desorption recombination (HDDR) processed Nd-Fe-B powders  
 °H. Sepehri-Amin\*, T. Ohkubo\*, K. Hono\*, K. Guth\*\*, O. Gutfleisch\*\*\*\*  
 (\*NIMS, \*\*Fraunhofer ISC, \*\*\*Tech. Univ. Darmstadt)

## Sep. 2/Room C

### Material Characterization

10 : 45 ~ 12 : 00

Chair: X. Liu (Shinshu Univ.)

- 2aC-1 Magnetic properties and hardness changes on cold rolled low carbon steel under recovery process  
°F. Ito, K. Takekawa, T. Murakami, H. Kikuchi (Iwate Univ.)
- 2aC-2 Measurement of thickness using nano-granular in gap magnetic sensor  
°T. Ozawa, H. Mashiko, K. Atsumi, S. Yabukami, J. Totsuka\*, S. Koyama\*, J. Hayasaka\*\*, N. Wako\*\*,  
K. I. Arai\*\* (Tohoku Gakuin Univ., \*Daido Steel, \*\*RIEMM)
- 2aC-3 Development of a magnetic inspection apparatus for detection of corrosion under insulation  
°T. Hara, M. Kasuga, K. Sakai, T. Kiwa, K. Tsukada (Okayama Univ.)
- 2aC-4 Detection of back-side defect by magnetic flux leakage method using TMR sensor  
°K. Shiga, Y. Tsukamoto, K. Sakai, T. Kiwa, T. Nishikawa\*, K. Tsukada (Okayama Univ., \*Konica Minolta)
- 2aC-5 Evaluation on internal defect detection for laser welding joint on SUS304 pipe using by eddy current sensor  
°K. Yazaki\*\*\*, K. Sugimura\*\*, M. Sonehara\*\*, T. Sato\*\*, S. Shimadu\* (\*Takashima, \*\*Shinshu Univ.)

### Multiferroics and Simulation

13 : 30 ~ 14 : 45

Chair: H. Takagi (Toyohashi Univ. Tech.)

- 2pC-1 Characterization of magnetic and optical response in a single crystalline Bi-Ferrite  
°A. Yamaguchi, T. Yamamoto, Y. Utsumi, S. Nakashima, H. Fujisawa (Univ. Hyogo)
- 2pC-2 Preparation and characterization of Y-type ferrite  
°T. Teraoka, X. Liu (Shinshu Univ.)
- 2pC-3 Control of direction of magnetization by local electric field in BiFeO<sub>3</sub> based multiferroic thin films with (111) orientation  
°S. Yoshimura, Y. Sugawara, J. Lu, G. Egawa, Y. Kinoshita, H. Saito (Akita Univ.)
- 2pC-4 Different magnetization process of torus magnetic cluster  
°K. Terashima, K. Suzuki, K. Yamaguchi, T. Uchimoto\*, T. Takagi\* (Fukushima Univ., \*Tohoku Univ.)
- 2pC-5 Accelerating method of micromagnetic simulation interpolating magnetization vector  
°T. Ataka, A. Furuya, J. Fujisaki, K. Shimizu, Y. Uehara, T. Tanaka, H. Oshima\* (Fujitsu, \*Fujitsu Labs.)

### Magneto-optics I

15 : 00 ~ 16 : 15

Chair: A. Yamaguchi (Univ. Hyogo)

- 2pC-6 Surface plasmon responding on magnetic field for Au / ZnFe<sub>2</sub>O<sub>4</sub> film  
°K. Narushima, Y. Ashizawa, K. Brachwitz\*, H. Hochmuth\*, M. Lorenz\*, M. Grundmann\*, K. Nakagawa  
(Nihon Univ., \*Univ. Leipzig)
- 2pC-7 Buffer layer dependence of bismuth iron garnet prepared on amorphous substrates  
°N. Adachi, K. Hayashi, Y. Kiba, S. Fujiuchi, T. Ota (Nagoya Inst. Tech.)
- 2pC-8 Magneto-chiral effects by a meta-molecule consisting of a ferrite rod and copper chiral structure  
°S. Tomita, K. Sawada\*, A. Porokhnyuk\*\*, T. Ueda\*\* (NAIST, \*RIKEN/SPring-8, \*\*Kyoto Inst. of Tech)
- 2pC-9 Characterization of Nd<sub>0.5</sub>Bi<sub>2.5</sub>Fe<sub>5-y</sub>Ga<sub>y</sub>O<sub>12</sub> (y = 0, 0.5, 1) films on glass substrates prepared by Metal Organic Decomposition (MOD) method  
°G. Lou, M. Sasaki, T. Hashinaka, A. Meguro, M. Ninomiya, T. Ishibashi (Nagaoka Univ. Tech.)
- 2pC-10 Effect of spin-dependent scattering on optical properties for Co/Ru multilayer film  
°S. Saito, S. Mizuno\*, K. Akahane, H. Sato\*, H. Uchida\* (Tohoku Univ., \*Tohoku Inst. Tech.)

### Magneto-optics II

16 : 30 ~ 17 : 45

Chair: K. Nakagawa (Nihon Univ.)

- 2pC-11 Fundamental study on colorization of magneto-optical three dimensional display  
°H. Takagi, K. Kudo, K. Nakamura, T. Goto, Pang Boey Lim, M. Inoue (Toyohashi Univ. Tech.)
- 2pC-12 Formation of magnetophotonic crystals with cerium substituted yttrium iron garnets  
°T. Goto, T. Yoshimoto, N. Kanazawa, R. Isogai, H. Takagi, C. Ross\*, M. Inoue (Toyohashi Univ. Tech., \*MIT)
- 2pC-13 Study on diffraction efficiency of volumetric magnetic holograms with magnetophotonic crystal  
°R. Isogai, K. Kobayashi, S. Suzuki, T. Goto, H. Takagi, Y. Nakamura, P.B. Lim, M. Inoue (Toyohashi Univ. Tech.)
- 2pC-14 The diffraction efficiency of magnetic volumetric hologram in magnetic-garnet/alumina multilayer film  
°K. Kobayashi, R. Isogai, S. Suzuki, T. Goto, H. Takagi, P.B. Lim, Y. Nakamura, M. Inoue (Toyohashi Univ. Tech.)
- 2pC-15 Fundamental study on magneto-optic three dimensional displays for gray-level holograms  
°K. Nakamura, H. Takagi, T. Goto, Pang Boey Lim, M. Inoue (Toyohashi Univ. Tech.)

## Sep. 2/Room D

### Spintronics Films

9 : 45 ~ 10 : 45

Chair: S. Mizukami (Tohoku Univ.)

- 2aD-1 Electronic structure and magnetotransport properties of graphene/cobalt junctions  
°S. Entani, H. Naramoto, S. Sakai (JAEA)
- 2aD-2 Effect of hydrogenation on spin transports via the edge states in graphene nano-ribbon  
°K. Inuzuka, S. Honda, N. Sano (Univ. Tsukuba)
- 2aD-3 Luminescence conditions for ZnTe/ZnMnTe films grown on sapphire substrates by MBE  
°M. Imamura, Y. Fujimura (Fukuoka Inst. Tech.)
- 2aD-4 Magnetic properties of Mn<sub>4</sub>N films fabricated by reactive sputtering method ~dependence of N content~  
°K. Kabara, M. Tsunoda (Tohoku Univ.)

### Heusler Films

11 : 00 ~ 12 : 00

Chair: Y. Sakuraba (NIMS)

- 2aD-5 Co<sub>2</sub>FeSi/MgO and MgO/Co<sub>2</sub>FeSi structures with perpendicular magnetic anisotropy formed by facing targets sputtering method  
°T. Suzuki, K. Shinohara, Y. Takamura, S. Nakagawa (Tokyo Inst. Tech.)
- 2aD-6 Band-gap measurements of Heusler alloy films using circularly-polarised infrared light  
T. Alhuwaymel\*, R. Abdullah\*, O. Whear\*, T. Huminiuc\*, R. Carpenter\*, Mohamed El-Gomati\*,  
°A. Hirohata\*\*\* (\*Univ. York, \*\*JST-PREST)
- 2aD-7 Magnetic properties of Mn-Co-V-Ga Heusler alloy thin film  
T. Tsuchiya, T. Sugiyama, °T. Kubota, I. Narita, M. Mizuguchi, T. Ueno\*, N. Inami\*\*, K. Ono\*\*,  
K. Takanashi (Tohoku Univ., \*NIMS, \*\*KEK)
- 2aD-8 Anomalous Nernst effect in MnCoGa alloy thin films  
°M. Mizuguchi, M. Inoue, T. Sugiyama, T. Kubota, K. Takanashi (Tohoku Univ.)

### Spin Current

13 : 00 ~ 14 : 00

Chair: S. Kasai (NIMS)

- 2pD-1 Characterization of spin pumping effect in microfabricated devices with nonmagnetic materials  
°T. Yamamoto, T. Seki, S. Ono\*, K. Miwa\*, K. Takanashi (Tohoku Univ., \*CRIEPI)
- 2pD-2 Spin-current amplification by geometrical effects in a lateral spin-valve  
R. Abdullah\*, A. Vick\*, B. Murphy\*, °A. Hirohata\*\*\* (\*Univ. York, \*\*JST-PREST)
- 2pD-3 Observation and evaluation of spin-charge conversion in single-layer graphene  
°R. Ohshima\*, A. Sakai\*, Y. Ando\*\*\*, T. Shinjo\*\*\*, K. Hamaya\*, K. Kawahara\*\*\*,  
H. Ago\*\*\*, M. Shiraishi\*\*\* (\*Osaka Univ., \*\*Kyoto Univ., \*\*\*Kyushu Univ.)
- 2pD-4 Distribution of pure spin current in the small ferromagnetic spin Josephson junction  
°M. Yoneda, S. Obata\*, M. Niwa\* (Japan Electronics College, \*Tokyo Denki Univ.)

### Spin Wave/Fast Response

14 : 15 ~ 15 : 30

Chair: K. Yamada (Univ. Electro-Communications)

- 2pD-5 All-optical detection of spin wave propagation in magnetic alloys films  
°S. Mizukami, S. Iihama, T. Kubota, R. Ranjbar, A. Sugihara, Y. Ando, T. Miyazaki (Tohoku Univ.)
- 2pD-6 Time-domain measurement of propagating spin waves in an epitaxial Fe film  
°N. Ishida\*, K. Sekiguchi\*\*\*, H. Sukegawa\*\*\* (\*Keio Univ., \*\*JST-PREST, \*\*\*NIMS)
- 2pD-7 Brillouin light scattering spectroscopy of spin wave interference in a NiFe wire  
°N. Sato\*, K. Sekiguchi\*\*\* (\*Keio Univ., \*\*JST-PREST)
- 2pD-8 High-frequency voltage-assisted magnetization reversal  
°T. Nozaki\*\*\*, H. Arai\*, K. Yakushiji\*\*\*, S. Tamaru\*, H. Kubota\*\*\*, H. Imamura\*,  
A. Fukushima\*\*\*, S. Yuasa\*\*\* (\*AIST, \*\*JST-CREST)
- 2pD-9 Laser-induced ultrafast demagnetization in L1<sub>0</sub>-FePt films  
Y. Sasaki, °S. Mizukami, S. Iihama, H. Naganuma, M. Oogane, T. Miyazaki, Y. Ando (Tohoku Univ.)

**Spin Torque** **15 : 45 ~ 16 : 45** Chair: S. Fukami (Tohoku Univ.)

- 2pD-10 Study on current-induced dynamics of bubble domains in TbFeCo wires  
°M. Tanaka, H. Kanazawa, S. Sumitomo, S. Honda\*, K. Mibu, H. Awano\*\*  
(Nagoya Inst. Tech., \*Univ. Tsukuba, \*\*Toyota Tech. Inst.)
- 2pD-11 Effect of the Gilbert damping constant on the spin-transfer switching: a macrospin model study  
°S. Nakamura, T. Sato, K. Yamada, Y. Nakatani (Univ. Electro-Communications)
- 2pD-12 Effect of the Gilbert damping constant on the spin-transfer switching: a micromagnetic model study  
°S. Nakamura, T. Sato, K. Yamada, Y. Nakatani (Univ. Electro-Communications)
- 2pD-13 Numerical simulation on magnetization reversal in synthetic-ferri MRAM free layer  
°K. Shinn, B. Shi, T. Tanaka, K. Matsuyama (Kyushu Univ.)

**Sep. 2/Room E**

**Soft Magnetic Materials I (Ferrite/High Frequency)** **9 : 00 ~ 10 : 15** Chair: H. Taguchi (TDK)

- 2aE-1 Preparation of Y-type ferrite particles by the Spray-Pyrolysis method using a two-fluid nozzle  
°K. Miyajima, K. Kakizaki, K. Kamishima (Saitama Univ.)
- 2aE-2 Characterization of nanocrystalline fine MgFe<sub>2</sub>O<sub>4</sub> soft ferrite powder synthesized by ultrasonic spray pyrolysis method  
°H. Das\*, \*\*, K. Shinozaki\*\*\*, H. Suzuki\*, N. Wakiya\*  
(\*Shizuoka Univ., \*\*Bangladesh Atomic Energy Commission, \*\*\*Tokyo Inst. Tech.)
- 2aE-3 Controlled microwave-assisted synthesis of nano-crystalline zinc ferrite  
°R. Sai\*\*\*, Suresh D. Kulkarni\*\*, N. Bhat\*\*, S. A. Shivashankar\*\* (\*Tohoku Univ., \*\*IISc)
- 2aE-4 Inter correction measurement of permeability and permittivity by short and open circuited coaxial line  
°S. Takeda, T. Hotchi\*, S. Motomura\*, H. Suzuki\* (Magnontech, \*KEYCOM)
- 2aE-5 High frequency soft-magnetic properties and thermal stability of CoPd-SrTiO<sub>3</sub> nano-composite films  
°Y. Zhang\*, N. Kobayashi\*\*, M. Naoe\*\*, S. Ohnuma\*\*\*, H. Masumoto\* (\*Tohoku Univ., \*\*DENJIKEN)

**Soft Magnetic Materials II (Metals)** **10 : 30 ~ 12 : 00** Chair: S. Ohnuma (DENJIKEN)

- 2aE-6 Structure analysis of Fe-Si alloy thin films formed on MgO single-crystal substrates  
°T. Aida, T. Kawai, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\*  
(Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 2aE-7 Improvement of magnetic properties on Fe-(4-6)wt%Si alloys using high purity metallurgy  
°Z. Lei, Y. Mimura, T. Horiuchi, I. Sasaki, T. Ogawa\*, H. Era, C. Kaido\*\*  
(Kyushu Inst. Tech., \*MERI-FITC, \*\*Kitakyusyu Nat. Coll. Tech)
- 2aE-8 Magnetic and shape memory properties of Fe-Cr-Ni-Si-Co-Mn alloy  
°H. Muto, T. Todaka (Oita Univ.)
- 2aE-9 Micromagnetics simulation of random magnetic anisotropy in magnetic nanocrystals  
°S. Lee, N. Inami\*, T. Ishikawa\*, K. Iwano\*, C. Mitsumata\*\*, K. Ono\*, H. Yanagihara, E. Kita  
(Univ. Tsukuba, \*KEK, \*\*NIMS)
- 2aE-10 Improvement of thermal stability of CoFeSiB thin films  
M. Jimbo, °Y. Fujiwara\*, T. Shimizu (Daido Univ., \*Mie Univ.)
- 2aE-11 Magnetic properties of thick amorphous alloy sheets  
°T. Sato (SACO)

**Nanoparticle/Granular I** **13 : 30 ~ 14 : 30** Chair: T. Ogawa (Tohoku Univ.)

- 2pE-1 Structural and magnetic property changes of core-shell structured CoPt-CoFe<sub>2</sub>O<sub>4</sub> particle during heat treatment under reducing atmosphere  
J. Cuya, H. Miyamura, °J. Balachandran, S. Ishio\* (Univ. Shiga Pref., \*Akita Univ.)
- 2pE-2 Magnetic-dielectric effects of FeCo-MgF insulating nanogranular films  
°N. Kobayashi, T. Iwasa, K. Ishida, H. Masumoto\*, S. Takahashi\*, S. Maekawa\*\* (DENJIKEN, \*Tohoku Univ., \*\*JAEA)
- 2pE-3 Tunneling magnetoresistance effect of Co<sub>2</sub>Fe(AlSi)-MgF<sub>2</sub> granular films  
°M. Shinoda, Y. Fujiwara, K. Maeda, T. Kato\*, M. Hattori\*\*, M. Jimbo\*\*, T. Kobayashi  
(Mie Univ., \*Nagoya Univ., \*\*Daido Univ.)
- 2pE-4 Magnetic properties of carbon nano-particles synthesized by discharge in ethanol  
°T. Inamori, Y. Fujiwara, J. Murakami, T. Tanaka, S. Takase, K. Maeda, M. Jimbo\*,  
Y. Aoki, T. Kobayashi (Mie Univ., \*Daido Univ.)

- Nanoparticle/Granular II** **14 : 45 ~ 15 : 45** Chair: B. Jeyadevan (Univ. Shiga Pref.)
- 2pE-5 Correlation between growth dynamics, phase and saturation magnetization of Fe nanoparticles synthesized by chemical route °T. Ogawa (Tohoku Univ.)
- 2pE-6 Improvement of saturation magnetization of Fe nanoparticles by low-temperature post annealing in a hydrogen atmosphere °M. Kin, H. Kura, M. Tanaka, Y. Hayashi, J. Hasegawa, T. Ogawa\* (DENSO, \*Tohoku Univ.)
- 2pE-7 Preparation of  $\alpha$ -Fe/MgO nanoparticle assembly for observation of magnetic phase transition induced by electric field °A. Ishiyama, T. Sato (Keio Univ.)
- 2pE-8 CaH<sub>2</sub>-assisted low temperature synthesis of metallic magnetic nanoparticle-loaded multiwalled carbon tubes °S. Yamamoto\*, L. Seinerberg\*, M. Tsujimoto\*, Y. Kobayashi\*, M. Takano\*\*\*, H. Kageyama\* (\*Kyoto Univ., \*\*Okayama Univ.)

- Fabrication Process** **16 : 00 ~ 17 : 15** Chair: M. Jimbo (Daido Univ.)
- 2pE-9 Formation and soft-magnetic properties of thick Fe film deposited by Supersonic Free-Jet PVD °A. Yumoto, I. Takano\*, N. Niwa\* (Shibaura Inst. Tech., \*Kogakuin Univ.)
- 2pE-10 Magnetic properties and structure of isotropic Pr-Fe-B film magnets prepared by PLD method °S. Oshima, T. Yanai, M. Nakano, H. Fukunaga (Nagasaki Univ.)
- 2pE-11 Extraction of thinking process in gross relationship between deposition conditions and film quality of FePt magnet film by RF sputtering using analytic hierarchy process °S. Hirose, Y. Ezuka (AIST)
- 2pE-12 In-situ stress observation at the initial stage of film growth in FTS method °H. Hayashibara, M. Nakagome, Y. Takamura, S. Nakagawa (Tokyo Inst. Tech.)
- 2pE-13 Study on fabrication of composite film composed of FeCo nanoparticles and FePt electroplated film °Y. Hayashi, H. Yokoi, S. Hashi, H. Kura, T. Yanai\*, T. Ogawa, K. Ishiyama, M. Nakano\*, H. Fukunaga\* (Tohoku Univ., \*Nagasaki Univ.)

## Sep. 2/Room F

- Magnetic Field Analysis** **9 : 45 ~ 10 : 45** Chair: T. Sato (Shinshu Univ.)
- 2aF-1 Enhancement of high-frequency magnetic fields by using booster coils added to applicator for hyperthermia therapy °S. Yamada, Y. Ikegata, R. Hayashi, T. Ueno, M. Kakikaw (Kanazawa Univ.)
- 2aF-2 Magnetic field analysis for micro processing for internal horizontal circular pipe utilizing magnetic functional fluid °Y. Tsukada, S. Ikeda, N. Hiramatsu, Y. Sakurai, H. Nishida (Toyama Nat. Coll. Tech.)
- 2aF-3 Optimum yoke structure for enhancement of magnetic flux density in Halbach-type permanent magnets °S. Isogami, H. Matsumoto (Fukushima Nat. Coll. Tech.)
- 2aF-4 Iron loss calculation of soft ferromagnetic materials using magnetic circuit model considering magnetic hysteresis °H. Tanaka, K. Nakamura, O. Ichinokura (Tohoku Univ.)

- Wireless Power Transfer** **11 : 00 ~ 12 : 00** Chair: I. Sasada (Kyushu Univ.)
- 2aF-5 Compatibility with high efficiency and output voltage stabilization on wireless power transfer °Y. Ota, N. Aruga, S. Miyahara, F. Sato, H. Matsuki (Tohoku Univ.)
- 2aF-6 A study on efficiency improvement during power supply for contactless electric vehicle charge on moving °N. Aruga, S. Miyahara, F. Sato, H. Matsuki (Tohoku Univ.)
- 2aF-7 Proposal of electromagnetic resonant coupling type WPT using multi-frequency band °T. Doi (Ashikaga Inst. Tech.)
- 2aF-8 A study on transmission coil in Multi-device type wireless transmission system °K. Furusato, T. Nonaka, T. Takura\*, F. Sato\*\*, H. Matsuki\*\* (Hachinohe Nat. Coll. Tech., \*Tohoku Inst. Tech., \*\*Tohoku Univ.)

- Magnetic Shield/Biomagnetic Measurements** **13 : 00 ~ 14 : 00** Chair: T. Sasayama (Kyushu Univ.)
- 2pF-1 Weak field detection using MTJs magnetic sensor aimed at ultra-low-field nuclear magnetic resonance °M. Endo, S. Mizukami, K. Fujiwara, T. Nishikawa\*, M. Oogane, H. Naganuma, Y. Ando (Tohoku Univ., \*Konica Minolta)
- 2pF-2 N100 and P300 Brain waves detection using highly sensitive magneto-impedance sensor K. Wang, S. Tajima, °T. Uchiyama, S. Nakayama (Nagoya Univ.)



- 2pF-3 Investigation on method for evaluation of shielding factor of magnetically shielded room applied magnetic field with low-frequency. Part 3. Placement condition of coil on single-layered shielded room.  
 °Y. Yoneyama, A. Sakai, S. Yuuki\*, K. Kazami\*, K. Yamazaki\*\*, T. Shinnoh\*\*\*, T. Yamaguchi\*\*\*\*, K. Muramatsu\*\*\*\*\* (Giken-Kogyo, \*Yokogawa, \*\*Takenaka, \*\*\*Kajima, \*\*\*\*Daido Plant, \*\*\*\*\*Saga Univ.)
- 2pF-4 Investigation on method for evaluation on shielding factor of magnetically shielded room applied magnetic field with low frequency. Part 4. Measurement results of double-layered shielded room.  
 °S. Yuuki, K. Kazami, Y. Yoneyama\*, A. Sakai\*, K. Yamazaki\*\*, T. Shinnoh\*\*\*, T. Yamaguchi\*\*\*\*, K. Muramatsu\*\*\*\*\* (Yokogawa, \*Giken Kogyo, \*\*Takenaka, \*\*\*Kajima, \*\*\*\*Daido Plant, \*\*\*\*\*Saga Univ.)

### Medical Magnetic Beads

14 : 15 ~ 15 : 30

Chair: T. Nakagawa (Osaka Univ.)

- 2pF-5 Improvement of mechanical stability and dispersion of hollow porous Au/FePt nanocapsules with thermally fused netlike shell  
 °R. Zhang, Y. Kitamoto (Tokyo Inst. Tech.)
- 2pF-6 Synthesis of iron oxide nanoparticles having anisotropic shape  
 °A. Horiuchi, H. Latiff, A. Seki, K. Ota, M. Kishimoto, S. Yamamoto\*, H. Yanagihara, E. Kita (Univ. Tsukuba, \*Kyoto Univ.)
- 2pF-7 Synthesis of biocompatible hydroxyapatite - lanthanum strontium manganite hybrid particles  
 °S. Sugita, H. Das, N. Sakamoto, H. Aono\*, K. Shinozaki\*\*, H. Suzuki, N. Wakiya (Shizuoka Univ., \*Ehime Univ., \*\*Tokyo Inst. Tech.)
- 2pF-8 Development of Synthesis Technology for Particles Suitable Magnetic Hyperthermia in Wide Magnetic Field and Frequency Range  
 °T. Iwamoto\*, M. Tokunaga\*, A. Mizuno\*, H. Mamiya\*, B. Jeyadevan (Univ. Shiga. Pref., \*NIMS)
- 2pF-9 Modeling of volume distribution of magnetic nanoparticles by a mixture of log-normal distributions  
 °T. Sasayama, T. Yoshida, K. Enpuku (Kyushu Univ.)

### Medical Treatments I

15 : 45 ~ 17 : 00

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

- 2pF-10 Characterization of the third harmonics for magnetic nanoparticles  
 °A. Hirokawa, S. Bai, K. Tanabe, T. Yoshida, K. Enpuku (Kyushu Univ.)
- 2pF-11 Improvement of spatial resolution of magnetic nanoparticle imaging  
 °S. Bai, A. Hirokawa, K. Tanabe, T. Yoshida, K. Enpuku (Kyushu Univ.)
- 2pF-12 Non-equilibrium and non-linear magnetic response of magnetic nanoparticles and artifacts in magnetic particle imaging  
 °H. Mamiya, B. Jeyadevan\* (NIMS, \*Univ. Shiga Pref.)
- 2pF-13 Study on delay time of sonic wave emission from magnetic nanoparticles stimulated by alternating magnetic field application  
 °I. Ishida, T. Nakagawa, S. Seino, T. Yamamoto (Osaka Univ.)
- 2pF-14 Immunoassay using binding reaction of magnetic marker under applied magnetic field  
 °T. Sakakibara, T. Yoshida, K. Enpuku (Kyushu Univ.)

### Sep. 3/Room A

#### Microwave Assisted Recording

10 : 00 ~ 11 : 00

Chair: T. Kato (Nagoya Univ.)

- 3aA-1 Microwave-assisted switching of perpendicular MTJ nanodot — Correlation with ferromagnetic resonance —  
 °H. Suto, T. Nagasawa, K. Kudo, K. Mizushima, R. Sato (Toshiba)
- 3aA-2 Experiment on microwave-assisted magnetization reversal using microwave field combined with ns-wide impulse field  
 °G. Okano, Y. Nozaki (Keio Univ.)
- 3aA-3 Method for increasing AC-field amplitude in MAMR  
 °R. Koga, F. Akagi, K. Yoshida (Kogakuin Univ.)
- 3aA-4 Microwave assisted magnetization switching of layered magnetic nanodot  
 °M. Furuta, S. Okamoto, N. Kikuchi, O. Kitakami, T. Shimatsu (Tohoku Univ.)

#### Heat Assisted Magnetic Recording

11 : 15 ~ 12 : 30

Chair: A. Sugiyama (Waseda Univ.)

- 3aA-5 Thermally assisted magnetic recording using plasmon antenna with ultra short laser pulse  
 °H. Mano, H. Yoshikawa, Y. Ashizawa, A. Tsukamoto, Y. Sasaki\*, S. Saito\*, M. Takahashi\*, S. Ohnuki, K. Nakagawa (Nihon Univ., \*Tohoku Univ.)

- 3aA-6 Electromagnetic analysis of surface plasmon propagation along an edge of a metallic thin film and application to a plasmonic waveguide for thermally assisted magnetic recording  
 °Y. Hayashi, K. Tamura, Y. Ashizawa, S. Ohnuki, K. Nakagawa (Nihon Univ.)
- 3aA-7 Dielectric interlayer thickness dependence of ultrashort laser-induced ultrafast thermalization and thermal diffusion process in GdFeCo double-layered films  
 °T. Sato, H. Yoshikawa, A. Tsukamoto, A. Itoh (Nihon Univ.)
- 3aA-8 All-optical magnetization switching property depends on multi layered structure  
 °H. Yoshikawa, T. Sato, A. Tsukamoto, A. Itoh (Nihon Univ.)
- 3aA-9 Effect of rise-time of head field on bit error rate for heat assisted magnetic recording with BPM  
 °N. Tamura, F. Akagi (Kogakuin Univ.)

### Bit Patterned Media

13 : 30 ~ 14 : 30

Chair: N. Honda (Tohoku Inst. Tech.)

- 3pA-1 Formation of  $L1_0$ -FePt nanoparticles film by rapid thermal annealing  
 °K. Aikawa, Y. Fujihira, T. Hachisu, A. Sugiyama, T. Osaka, T. Shige\*, A. Yamane\*, A. Sakawaki\*  
 (Waseda Univ., \*Showa Denko)
- 3pA-2 Fabrication of MnGa (001) films for application to bit patterned media  
 °T. Negoro, M. Tanimoto, D. Oshima, T. Kato, S. Iwata (Nagoya Univ.)
- 3pA-3 Magnetic circular dichroism of ion irradiated MnGa film  
 °D. Oshima, M. Tanimoto, T. Kato, Y. Fujiwara\*, T. Nakamura\*\*, Y. Kotani\*\*,  
 S. Tsunashima\*\*\*, S. Iwata (Nagoya Univ., \*Mie Univ., \*\*JASRI/SPring-8, \*\*\*NISRI)
- 3pA-4 Magnetic properties of Sr-ferrite film by using Au self-assembly underlayer  
 °S. Shiraishi, X. Liu (Shinshu Univ.)

### Sep. 3/Room B

#### Symposium "Spin manipulation using light"

Chief Organizer: H. Awano (Toyota Tech. Inst.)

10 : 00 ~ 12 : 00

Chair: H. Awano (Toyota Tech. Inst.)

- 3aB-1 Ultrafast manipulation of spin and orbital angular momenta by light pulses  
 °T. Satoh (Kyushu Univ.)
- 3aB-2 Ultrafast spin manipulation of sub-lattice magnetic system with light  
 °A. Tsukamoto (Nihon Univ.)
- 3aB-3 Laser induced THz spin dynamics in magnetic alloys  
 °S. Mizukami, S. Iihama, Q. Ma, A. Sugihara, K. Suzuki, X. Zhang, Y. Ando, T. Miyazaki (Tohoku Univ.)
- 3aB-4 Manipulation of ordered spins with light — new photonic materials with magnetism —  
 °H. Munekata (Tokyo Inst. Tech.)

13 : 00 ~ 14 : 30

Chair: H. Takagi (Toyoashi Univ. Tech.)

- 3pB-1 Gilbert damping in magnetic multilayers with perpendicular anisotropy  
 °T. Kato, K. Adachi, Y. Kusanagi\*, S. Okamoto\*, N. Kikuchi\*, O. Kitakami\*, S. Iwata (Nagoya Univ., \*Tohoku Univ.)
- 3pB-2 Surface plasmon techniques for ultra-high density magnetic recording  
 °K. Nakagawa (Nihon Univ.)
- 3pB-3 Polarization Properties of a-SNOM  
 °T. Ishibashi, Q. Meng, Y. Cai, S. Ikeda, H. Ono, A. Emoto\*, T. Shioda\*\*  
 (Nagaoka Univ. Tech., \*Doshisha Univ., \*\*Saitama Univ.)

### Sep. 3/Room C

#### Rare Earth Magnet III

9 : 15 ~ 10 : 30

Chair: S. Okamoto (Tohoku Univ.)

- 3aC-1 Site preference of Dy ion in  $(Nd_{1-x}Dy_x)_2Fe_{14}B$  ( $x = 0.125, 0.5$ )  
 °K. Saito, N. Inami, T. Ueno\*, Y. Takeichi, R. Sagayama, R. Kumai, M. Yano\*\*, A. Kato\*\*,  
 T. Shoji\*\*, A. Manabe\*\*, Y. Kaneko\*\*\*, T. Hansen\*\*\*\*, K. Ono  
 (KEK, \*NIMS, \*\*TOYOTA motor, \*\*\*TOYOTA Central R&D Labs., \*\*\*\*Inst. Lane-Langevin)
- 3aC-2 Magnetic domains analysis of Nd-Fe-B sintered magnet using topological defect model  
 °K. Ono, C. Mitsumata\*, K. Iwano, H. Tsukahara, M. Yano\*\*, T. Shoji\*\*, A. Manabe\*\*, A. Kato\*\*  
 (KEK, \*NIMS, \*\*TOYOTA motor)
- 3aC-3 Analysis of SANS patterns in magnetization reversal process on Nd-Fe-B magnet using micromagnetics simulation  
 °H. Tsukahara, K. Iwano, N. Inami, C. Mitsumata\*, M. Yano\*\*, T. Ueno\*, K. Saito, T. Shoji\*\*,  
 A. Manabe\*\*, A. Kato\*\*, K. Ono (KEK, \*NIMS, \*\*TOYOTA motor)



3aC-4 Quantitative explanation of coercivity change in rare-earth added Nd-Fe-B magnets  
°H. Kato, M. Sagawa\* (Yamagata Univ., \*Intermetallics)

3aC-5 Effect of non-magnetic phases in Nd-Fe-B magnets on nucleation of reversed domains  
°R. Hori, T. Yanai, M. Nakano, H. Fukunaga, R. Kato\*, Y. Nakazawa\* (Nagasaki Univ., \*Honda R&D)

**Rare Earth Magnet IV** **10 : 45 ~ 12 : 00** Chair: M. Takezawa (Kyushu Inst Tech.)

3aC-6 Crystal field parameters based on Wannier functions: Application to Nd<sub>2</sub>Fe<sub>14</sub>B  
°T. Yoshioka, H. Tsuchiura, N. Pavel\* (Tohoku Univ., \*Institute of Physics of ASCR)

3aC-7 Negative exchange coupling in Nd<sub>2</sub>Fe<sub>14</sub>B(100)/ $\alpha$ -Fe interface  
°D. Ogawa, K. Koike, Y. Mizuno, T. Miyazaki\*, Y. Ando\*, H. Kato (Yamagata Univ., \*Tohoku Univ.)

3aC-8 A theoretical study on the temperature dependence of magnetic crystalline anisotropy constants in Nd<sub>2</sub>Fe<sub>14</sub>B  
°R. Sasaki, D. Miura, A. Sakuma (Tohoku Univ.)

3aC-9 First-order-reversal-curve measurements of Nd-Fe-B magnets  
°N. Inami, T. Ueno\*, H. Tsukahara, A. Hashimoto, K. Ono (KEK, \*NIMS)

3aC-10 Magnetization reversal of Nd-Fe-B dots by nanosecond pulse fields  
°K. Kadonosawa, Y. Azuma, N. Kikuchi, R. Goto, S. Okamoto, O. Kitakami (Tohoku Univ.)

**Rare Earth Magnet V** **13 : 00 ~ 14 : 30** Chair: H. Hirose (NIMS)

3pC-1 Influence of substrate temperature on the structure of Nd-Fe-B alloy thin film  
°A. Suzuki, Y. Noguchi, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\*  
(Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)

3pC-2 Preparation of Nd-Fe-B alloy epitaxial thin films on (001) single-crystal metal underlayers  
°Y. Noguchi, A. Suzuki, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\*  
(Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)

3pC-3 Temperature coefficient of coercivity of Nd<sub>2</sub>Fe<sub>14</sub>B film improved by covering metal layer  
°T. Sato, Y. Kaneko (TOYOTA Central R&D Labs.)

3pC-4 Fabrication and magnetic properties of Nd-Fe-B thin films °C. Ma, S. Wang, X. Liu (Shinshu Univ.)

3pC-5 Effect of interlayer on magnetic properties of Nd<sub>2</sub>Fe<sub>14</sub>B/M(M = Nd, Mo)/Fe thin films  
°K. Koike, Y. Ohira, D. Ogawa, Y. Mizuno, T. Miyazaki\*, Y. Ando\*, H. Kato (Yamagata Univ., \*Tohoku Univ.)

3pC-6 Magnetic viscosity measurements of Nd-Fe-B and Nd-Fe-B/Nd thin films  
°R. Goto, S. Okamoto, N. Kikuchi, O. Kitakami (Tohoku Univ.)

**Sep. 3/Room D**

**High-Frequency Device I** **9 : 30 ~ 10 : 45** Chair: S. Hashi (Tohoku Univ.)

3aD-1 High frequency oscillation with NCMR trilayer device at zero field  
°Y. Toda, Y. Shiokawa, K. Sakamoto, M. Al-Mahdawi, M. Sahashi (Tohoku Univ.)

3aD-2 Free layer thickness dependence of microwave features in NCMR-STO  
°K. Sakamoto, Y. Shiokawa, Y. Toda, S. Kasuga, M. Al-Mahdawi, M. Sahashi (Tohoku Univ.)

3aD-3 Wireless transmission by oscillation of NCMR-STO  
°S. Kasuga, Y. Shiokawa, K. Sakamoto, Y. Toda, M. Al-Mahdawi, T. Suzuki\*, E. Suzuki\*, M. Sahashi  
(Tohoku Univ., \*TDK)

3aD-4 Estimation of GHz range magnetic near field distribution on a CPW using beating field type HF-MFM  
°Y. Endo, K. Arai, M. Onishi, K. Yanagi, Y. Shimada, M. Yamaguchi (Tohoku Univ.)

3aD-5 Permeability measurement of magnetic thin film by microstrip probe  
°K. Kusunoki, S. Yabukami\*, T. Ozawa\*, H. Uetake\*, H. Yamada, Y. Miyazawa\*\*, Y. Shimada\*\*\*  
(Sendai Nat. Coll. Tech., \*Tohoku Gakuin Univ., \*\*Toei Scientific Industrial, \*\*\*Tohoku Univ.)

**High-Frequency Device II** **11 : 00 ~ 12 : 00** Chair: S. Yabukami (Tohoku Gakuin Univ.)

3aD-6 Electromagnetic analysis of FMR performance on multilayered Co-Zr-Nb film integrated on MSL  
°J. Ma, Y. Shimada, S. Muroga, Y. Endo, M. Yamaguchi (Tohoku Univ.)

- 3aD-7 High noise suppression effects of magnetically isotropic Co-AlN films  
 °H. Kijima\*, S. Ohnuma\*\*\*, Y. Shimada\*, H. Masumoto\*, Y. Endo\*, M. Yamaguchi\* (\*Tohoku Univ., \*\*DENJIKEN)
- 3aD-8 Study on the fabrication of inductors with magnetically soft flakes composite  
 °H. Sato, Y. Endo, T. Miyazaki, M. Yamaguchi, H. Kamada\*, M. Takahashi\*, M. Sakamoto\*,  
 S. Maita\*, N. Kato\* (Tohoku Univ., \*Hikaridenshi)
- 3aD-9 Study on the electrical characteristics of micro inductors with magnetically soft flakes composite  
 °H. Sato, Y. Endo, T. Miyazaki, M. Yamaguchi, H. Kamada\*, M. Takahashi\*, M. Sakamoto\*, S. Maita\*, N. Kato\*  
 (Tohoku Univ., \*Hikaridenshi)

### Magnetic Measurement

13 : 15 ~ 14 : 30

Chair: Y. Endo (Tohoku Univ.)

- 3pD-1 Development of AC magnetic field imaging technique using polarized pulsed neutrons  
 °K. Hiroi, T. Shinohara, H. Hayashida\*, K. Oikawa, M. Harada, T. Kai, M. Arai (J-PARC, \*CROSS)
- 3pD-2 Current status of small and wide angle neutron scattering instrument "TAIKAN" in J-PARC  
 °K. Ohishi, J. Suzuki, S. Takata\*, H. Iwase, T. Shinohara\*, T. Oku\*, K. Nakatani\*, Y. Inamura\*,  
 T. Ito, H. Kira, T. Morikawa, M. Sahara, T. Hosoya\*, K. Suzuya\*, K. Aizawa\*, M. Arai\*, T. Otomo\*,  
 M. Sugiyama\*\* (CROSS, \*J-PARC, \*\*Kyoto Univ.)
- 3pD-3 Operation inspection of the high sensitive magneto-impedance sensor by FPGA  
 °Y. Okuda, P. Wu, S. Tajima, T. Watanabe\*, T. Uchiyama (Nagoya Univ., \*DENSO)
- 3pD-4 Position sensing system of wireless magnetic marker using FPGA board  
 °K. Takahashi, S. Yabukami, T. Ozawa, O. Fujioka\*, S. Hashi\*\*, H. Kanetaka\*\*  
 (Tohoku Gakuin Univ., \*NI Japan, \*\*Tohoku Univ.)
- 3pD-5 The  $\Delta E$  effect under tensile stress  
 °T. Takiya, N. Kutsuzawa, O. Ishii (Yamagata Univ.)

### Sep. 3/Room E

#### Nano-Structure I

9 : 30 ~ 10 : 30

Chair: N. Hosoito (NAIST)

- 3aE-1 Successive logic-in-memory operation in spin wave based devices with domain wall data coding scheme  
 °K. Imamura, Y. Urazuka, T. Tanaka, K. Matsuyama (Kyushu Univ.)
- 3aE-2 Detection of current driven magnetic domains in [Co/Pd] nanowire by magneto-resistive change  
 °M. Okuda\*\*\*, Y. Miyamoto\*\*\*\*, E. Miyashita\*, N. Saito\*, N. Hayashi\*, S. Nakagawa\*\*  
 (\*NHK, \*\*Tokyo Inst. Tech., \*\*\*NHK-ES)
- 3aE-3 Computer simulation of a domain wall motion by a slope electric field  
 °S. Murayama, K. Yamada, Y. Nakatani (Univ. Electro-Communications)
- 3aE-4 Magnetization manipulation method for nanodots with magnetic multilayer by magnetic force microscopy  
 °K. Iwaki, H. Nomura, R. Nakatani (Osaka Univ.)

#### Nano-Structure II

10 : 45 ~ 11 : 45

Chair: S. Nakagawa (Tokyo Inst. Tech.)

- 3aE-5 Jahn-Teller distortion and magnetism of carbon void defect on graphene-nano-ribbon  
 °N. Ota (Univ. Tsukuba)
- 3aE-6 Fabrication of surface nano metallic structure and high density isolated FePt particles  
 °M. Imazato, A. Tsukamoto (Nihon Univ.)
- 3aE-7 Magnetic resonance of ferromagnetic-metal chiral meta-molecules  
 °T. Kodama, S. Tomita, K. Sawada\*, N. Hosoito, H. Yanagi (NAIST, \*RIKEN)
- 3aE-8 FMR measurement on Co/Pt multilayer nanodots  
 °N. Kikuchi, M. Furuta, S. Okamoto, O. Kitakami, T. Shimatsu (Tohoku Univ.)

#### Thin Film I

13 : 00 ~ 14 : 30

Chair: T. Nagahama (Hokkaido Univ.)

- 3pE-1 Large negative magnetic anisotropy in epitaxial trilayer of W/Fe/W (001)  
 °Y. Matsumoto, S. Okamoto, N. Kikuchi, O. Kitakami, Y. Miura\* (Tohoku Univ., \*Kyoto Inst. Tech.)
- 3pE-2 Magnetic properties and magnetization reversal for CoCrPt granular perpendicular media consisting of anti-ferromagnetic coupling grains  
 °Y. Nayakama, A. Hotta, T. Shimatsu, N. Kikuchi, S. Okamoto, O. Kitakami (Tohoku Univ.)

- 3pE-3 Pt surface segregation and ordering for  $L1_0$ -FePt perpendicularly magnetized poly-crystalline films  
 °A. Hotta\*, T. Ono\*\*\*, T. Shimatsu\*, N. Kikuchi\*, S. Okamoto\*, O. Kitakami\* (\*Tohoku Univ., \*\*Fuji Electric)
- 3pE-4 Atomic layer stacking structure and uniaxial magnetocrystalline anisotropy of CoPt alloy sputtered films with close-packed plane orientation (I)  
 °S. Saito, N. Nozawa, S. Hinata, M. Takahashi (Tohoku Univ.)
- 3pE-5 Atomic layer stacking structure and uniaxial magnetocrystalline anisotropy of CoPt alloy sputtered films with close-packed plane orientation (II)  
 °S. Saito, N. Nozawa, S. Hinata, M. Takahashi, K. Shibuya\*, K. Hoshino\*, S. Awaya\* (Tohoku Univ., \*MST)
- 3pE-6 Magnetic property of Ni/Co multilayers prepared by atomic layer control  
 °A. Shioda, J. Shimada, T. Seki, K. Takanashi (Tohoku Univ.)

### Sep. 3/Room F

#### Power Magnetics I

9 : 15 ~ 10 : 30

Chair: T. Honda (Kyushu Inst. Tech.)

- 3aF-1 Bending levitation control for flexible steel plate (Fundamental consideration on levitation probability)  
 °H. Yonezawa, H. Marumori, T. Narita\*, H. Kato, S. Hasegawa, Y. Oshinoya (Tokai Univ., \*Tokyo Univ. Sci., Suwa)
- 3aF-2 Bending levitation control for flexible steel plate (Experimental study on levitation stability under disturbance)  
 °H. Marumori, H. Yonezawa, T. Narita\*, H. Kato, S. Hasegawa, Y. Oshinoya (Tokai Univ., \*Tokyo Univ. Sci., Suwa)
- 3aF-3 Effect of a magnetic field from the horizontal direction on a magnetically levitated steel plate (Evaluation of deflection using the FDM)  
 °T. Kurihara, T. Narita\*, H. Kato, S. Hasegawa, Y. Oshinoya (Tokai Univ., \*Tokyo Univ. Sci., Suwa)
- 3aF-4 Fundamental consideration on electromagnetic levitation system for flexible steel plate using magnetic field from horizontal direction  
 °T. Narita, Y. Ootsuka, M. Ooshima, Y. Oshinoya\* (Tokyo Univ. Sci., Suwa, \*Tokai Univ.)
- 3aF-5 Active control of an ultra-compact vehicle seat with a voice coil motor (Examination on reduction of cervix burden when fall from the bump)  
 °M. Mashino, M. Ishida, H. Kato, S. Hasegawa, Y. Oshinoya (Tokai Univ.)

#### Power Magnetics II

10 : 45 ~ 12 : 00

Chair: S. Yamada (Kanazawa Univ.)

- 3aF-6 An electromagnet shift unit control using energy evaluation control  
 °Y. Yamamoto, S. Hasegawa\*, Y. Oshinoya\* (IAEC, \*Tokai Univ.)
- 3aF-7 Study on moving coil-type linear generator for thermoacoustic electric generator  
 °I. Sato, S. Hasegawa, H. Kimura, Y. Oshinoya (Tokai Univ.)
- 3aF-8 Basic characteristics of in-wheel magnetic-g geared motor  
 K. Nakamura, °K. Akimoto, T. Takemae, O. Ichinokura (Tohoku Univ.)
- 3aF-9 Development of micro impedance pump driven by external magnetic field  
 °T. Nakashima, T. Honda (Kyushu Inst. Tech.)
- 3aF-10 Basic properties of magnetic drive micro pumps for liquid-cooling system using oscillating elastic films  
 °N. Mizoguchi, T. Honda (Kyushu Inst. Tech.)

#### Power Magnetics III

13 : 00 ~ 14 : 30

Chair: T. Takura (Tohoku Inst. Tech.)

- 3pF-1 Experimental comparison of magnetic gear with conventional mechanical gear  
 °M. Fukuoka, K. Nakamura, O. Ichinokura (Tohoku Univ.)
- 3pF-2 Active control of an ultra-compact vehicle seat with a voice coil motor (Fundamental consideration on switching control using heart rate variability)  
 °M. Ishida, M. Mashino, H. Kato, S. Hasegawa, Y. Oshinoya (Tokai Univ.)
- 3pF-3 Signal transmitter using high-ripple forward converter in wire communication system  
 °A. Katsuki, K. Masutomo\*, K. Morita\*, S. Maeyama\*\* (Nagasaki Univ., \*Kyushu Inst. Tech., \*\*TDK)
- 3pF-4 Size and weight reduction of lap-winding type three-phase variable inductor  
 K. Nakamura, °K. Honma, T. Ohinata\*, K. Arimatsu\*, T. Shirasaki\*, O. Ichinokura (Tohoku Univ., \*Tohoku Electric Power)

- 3pF-5 CMOS switch DC-DC buck converter using ferrite core inductor embedded in organic interposer  
K. Hagita, Y. Yazaki, Y. Kondo, M. Sonehara, °T. Sato, T. Fujii\*, K. Kobayashi\*, S. Nakazawa\*, H. Shimizu\*,  
T. Watanabe\*\*, Y. Seino\*\*, N. Matsushita\*\*, H. Yanagihara\*\*\*, T. Someya\*\*\*, H. Fuketa\*\*\*, T. Sakurai\*\*\*  
(Shinshu Univ., \*SHINKO, \*\*Tokyo Inst. Tech., \*\*\*Univ. Tokyo)
- 3pF-6 Thick film magnets deposited on Si substrates for MEMS applications  
°M. Oryoshi, A. Yamashita, T. Yanai, M. Nakano, H. Fukunaga, N. Matsumoto\*, Y. Fujii\* (Nagasaki Univ., \*KRI)

#### Sep. 4/Room A

- Magnetic Recording Head** **9 : 30 ~ 10 : 30** Chair: R. Sugita (Ibaraki Univ.)
- 4aA-1 Magneto-transport and microstructure properties of  $\text{Co}_2\text{Fe}(\text{Ga}_{0.5}\text{Ge}_{0.5})/\text{Cu}$  lateral spin valves  
°I. Ikhtiar\*\*\*, S. Kasai\*, A. Itoh\*\*\*\*, Y. K. Takahashi\*, T. Ohkubo\*\*\*\*, S. Mitani\*\*\*, K. Hono\*  
(\*NIMS, \*\*Univ. Tsukuba, \*\*\*Tokyo Univ. Sci.)
- 4aA-2 Non-local spin-valves using  $\text{Co}_2(\text{FeMn})\text{Si}$  Heusler alloy with large output  
°S. Shirotori, S. Hashimoto, M. Takagishi, Y. Kamiguchi, H. Iwasaki, K. Yamada (Toshiba)
- 4aA-3 High-frequency response analysis of SMR-MAMR head  
°T. Katayama, Y. Kanai, K. Yoshida\*, S. Greaves\*\*, H. Muraoka\*\* (Niigata Inst. Tech., \*Kogakuin Univ., \*\*Tohoku Univ.)
- 4aA-4 Study on the magnetization fluctuation noise in TMR read heads with various stripe heights  
°Y. Endo, P. Fan, M. Yamaguchi (Tohoku Univ.)

- Magnetic Recording Simulation** **10 : 45 ~ 11 : 45** Chair: S. Greaves (Tohoku Univ.)
- 4aA-5 Suppression of jitter noise by controlling distribution of magnetic grains  
°A. Hara, H. Muraoka (Tohoku Univ.)
- 4aA-6 Influence of in-plane recording field on transition noise of hard disks with various layer thickness ratio  
°A. Komuro, N. Tomiyama, K. Ebata, R. Sugita (Ibaraki Univ.)
- 4aA-7 Bit error rate performance for head skew angle in shingled magnetic recording  
°Y. Nakamura, H. Osawa, Y. Okamoto, Y. Kanai\*, H. Muraoka\*\* (Ehime Univ., \*Niigata Inst. Tech., \*\*Tohoku Univ.)
- 4aA-8 Microwave-assisted magnetic recording simulation aiming 4 Tbits/inch<sup>2</sup>  
S. Kashiwagi, °T. Tanaka, Y. Kanai\*, K. Matsuyama (Kyushu Univ., \*Niigata Inst. Tech.)

#### Order of Cultural Merit 2013 and Benjamin Franklin Medal 2014

- Commemorative Lecture** **13 : 00 ~ 14 : 00** S. Iwasaki (Tohoku Inst. Tech.)

- Magnetic Force Microscopy I** **14 : 30 ~ 16 : 00** Chair: H. Nomura (Osaka Univ.)
- 4pA-1 Spatial resolution and switching field of magnetic force microscope tip coated with magnetic bi-layer film consisting of Fe and CoPt-alloy  
°R. Nagatsu, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 4pA-2 Switching field of magnetic force microscope tip coated with Co/Pt multilayer film  
°R. Suzuki, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 4pA-3 Fabrication of high-coercivity FePt-based tips for AC magnetic imaging of magnetic writing head and direct measurement of tip-coercivity by pulse magnetic field  
F. Zheng, °G. Egawa, S. Yoshimura, Y. Zheng, Y. Kinoshita, H. Saito (Akita Univ.)
- 4pA-4 Simultaneous imaging of electric and magnetic field on  $(\text{Bi}_{0.6}\text{Ba}_{0.4})\text{FeO}_3$  multiferroic films by alternating force microscopy  
J. Lu, G. Egawa, Y. Kinoshita, S. Yoshimura, °H. Saito (Akita Univ.)
- 4pA-5 Alternating magnetic force microscopy: Performance evaluation of soft magnetic tips and high-resolution DC magnetic field imaging of magnetic recording media  
°S. Okayasu, F. Zheng, H. Qi, K. Srinivasa Rao, G. Egawa, Y. Kinoshita, S. Yoshimura, H. Saito (Akita Univ.)
- 4pA-6 Development of high-susceptibility Fe-based paramagnetic and Ag-Co superparamagnetic tips for magnetic imaging of strong DC magnetic field by alternating magnetic force microscopy  
°S. Yoshimura, S. Bansho, F. Zheng, G. Egawa, Y. Kinoshita, H. Saito (Akita Univ.)

**Magnetic Force Microscopy II****16 : 15 ~ 17 : 45**

Chair: N. Kikuchi (Tohoku Univ.)

- 4pA-7 Measurement of minute remnant magnetization by Needle Type Magnetic Probe  
 °T. Minamitani, D. Wakaura, S. Yamada (Kanazawa Univ.)
- 4pA-8 Magnetic force microscope tip prepared by coating with magnetic film and oxidation protection layer  
 °K. Kato, M. Ohtake, M. Futamoto, N. Inaba\*, F. Kirino\*\* (Chuo Univ., \*Yamagata Univ., \*\*Tokyo Univ. Arts)
- 4pA-9 Preparation and properties of magnetic force microscope probes using Co-Ferrite  
 °S. Fukaya, N. Takahashi, X. Liu (Shinshu Univ.)
- 4pA-10 Near-contact magnetic field imaging on FePt hard magnet film by alternating magnetic force microscopy with a high-susceptibility superparamagnetic Ag-Co tip  
 °S. Nakayama, W. Iwai, G. Egawa, Y. Kinoshita, S. Yoshimura, H. Saito (Akita Univ.)
- 4pA-11 AC magnetic field imaging of magnetic writing heads by alternating magnetic force microscopy using a soft magnetic tip  
 °H. Ijuin, F. Takiguchi, G. Egawa, Y. Kinoshita, S. Yoshimura, H. Saito (Akita Univ.)
- 4pA-12 Proposal of evaluation method of soft magnetic MFM tip's performance by AC magnetic field response  
 H. Qi, S. Okayasu, F. Zheng, G. Egawa, Y. Kinoshita, S. Yoshimura, °H. Saito (Akita Univ.)

**Sep. 4/Room B****Symposium "Energy magnetics improving motor efficiency"**

Chief Organizer: Y. Kaneko (TOYOTA Central R&amp;D Labs.)

**9 : 00 ~ 10 : 00**

Chair: H. Fukunaga (Nagasaki Univ.)

- 4aB-1 The progress of Energy Magnetism to improve Motor Energy efficiency  
 Y. Honkura (Magnedesign)
- 4aB-2 Advanced magnetic material requirement for higher efficient electrical motor design  
 K. Fujisaki (Toyota Tech. Inst.)

**10:15 ~ 12 : 15**

Chair: Y. Kaneko (TOYOTA Central R&amp;D Labs.)

- 4aB-3 Measurement of magnetic flux density on permanent magnet surfaces for IPM motor  
 °T. Hosoi, R. Okamoto, H. Matsui, D. Miyata, Y. Haseo, N. Tanaka\*, M. Inaba\*, Y. Kamiya\*  
 (NIPPON SOKEN, \*DENSO)
- 4aB-4 Behavior of a permanent magnet used for a high efficiency motor under a high frequency magnetic field  
 °C. Mishima, T. Ariizumi\*, Y. Kaneko\*\*, Y. Honkura\*\*\*  
 (Aichi Steel, \*Toei industry, \*\*TOYOTA Central R&D Labs., \*\*\*Magnedesign)
- 4aB-5 FEM analysis of hysteresis using a thermodynamic model  
 °F. Ikeda (PHOTON)
- 4aB-6 Magnet behavior in high frequency field using micromagnetic simulator  
 °F. Akagi, Y. Honkura\* (Kogakuin Univ., \*Aichi Steel)

**14 : 15 ~ 15 : 45**

Chair: K. Ohmori (JABM)

- 4pB-1 Development of Dy free NdFeB anisotropic bonded magnet with high performance  
 °K. Noguchi, C. Mishima, M. Shintaku, Y. Kawasugi, M. Yamazaki, H. Matsuoka, H. Mitarai (Aichi Steel)
- 4pB-2 Recent progress in Fe-based nanocrystalline soft magnetic alloys and their applications  
 °D. Azuma\*, M. Ohta\*\*\*, H. Yamamoto\*, Y. Yoshizawa\* (\*Hitachi Metal, \*\*Metglas)
- 4pB-3 Recent Developments of Non-Oriented Electrical Steel Sheet for Automobile Electrical Devices  
 °Y. Oda, T. Hiratani, S. Kasaki, T. Okubo, H. Toda (JFE Steel)

**16 : 00 ~ 17 : 45**

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

- 4pB-4 Research and development of next generation motors and its future issues  
 °S. Ogasawara, M. Takemoto (Hokkaido Univ.)
- 4pB-5 Movement of traction drive motor for EV/HEV — High Performance Design-concept and Issues of Permanent Magnet Motor for Toyota Prius —  
 °R. Mizutani (TOYOTA MOTOR)
- 4pB-6 Development of axial flux permanent motors with amorphous cores  
 °Z. Wang, Y. Enomoto, K. Souma\* (Hitachi, \*Hitachi Industrial Equipment Systems)
- 4pB-7 Development of high density and low loss powder magnetic core for reactor in hybrid vehicles  
 °T. Hattori, M. Sugiyama\*, H. Kishimoto\*, T. Saito\*\* (TOYOTA Central R&D Labs., \*TOYOTA motor, \*\*Daido Steel)

4pB-8 Measurement technology of new permanent magnets and motors for development of high efficiency motors  
°T. Kondo, S. Araki, Y. Sanga, Y. Asano, A. Yamagiwa (MagHEM)

#### Sep. 4/RoomC

**Magnetization Process and Magnetic Domain** 14 : 15 ~ 16 : 00 Chair: Y. Kamihara (Keio Univ.)

- 4pC-1 Switching of the magnetic vortex core in a Pac-man disk using a single current pulse  
°K. Yamada, T. Sato, Y. Nakatani (Univ. Electro-Communications)
- 4pC-2 Reconstruction of magnetic domain structure using Reverse Monte Carlo method with extended Fourier image  
°M. Tokii, E. Kita, C. Mitsumata\*, K. Ono\*\*, H. Yanagihara, M. Matsumoto (Univ. Tsukuba, \*NIMS, \*\*KEK)
- 4pC-3 Effect of interlayer interaction on domain structure of CoPt stacked thin films with perpendicular anisotropy  
°H. Kawamura, K. Hayakawa, R. Sugita (Ibaraki Univ.)
- 4pC-4 Magnetic hysteresis scaling in a field-induced phase for rare-earth metal Dy °R. Obara, S. Kobayashi (Iwate Univ.)
- 4pC-5 Spin/Orbital/Element specific hysteresis curve of rare earth - transition metal film by magnetic Compton scattering measurement  
°A. Agui, H. Sakurai\*, K. Suzuki\* (JAEA, \*Gunma Univ.)
- 4pC-6 Magnetization process of antivortex in X-shaped ferromagnetic cross wire  
°M. Goto\*, T. Tanazawa\*, K. Sekiguchi\*\*\*, Y. Nozaki\*\*\*\* (\*Keio Univ., \*\*JST-PRESTO, \*\*\*JST-CREST)
- 4pC-7 Local magnetic properties of austenite stainless steel applied tensile stress  
°M. Ishiwata, K. Suzuki, T. Takase, K. Yamaguchi (Fukushima Univ.)

**Magnetic Order** 16 : 15 ~ 18 : 00 Chair: K. Yamaguchi (Fukushima Univ.)

- 4pC-8 Phase stability and magnetic properties of  $Mn_3Ge_{1-x}Ga_x$  with the  $D0_{22}$  type structure  
°T. Sasaki, H. Okada, R. Umetsu\* (Tohoku Gakuin Univ., \*Tohoku Univ.)
- 4pC-9 Martensitic transformation and magnetic properties of Heusler alloy  $Pd_2Mn_{1+x}In_{1-x}$   
°H. Okada, R. Umetsu\*, T. Kanomata (Tohoku Gakuin Univ., \*Tohoku Univ.)
- 4pC-10 Mössbauer spectroscopy of two dimensional kondo lattice  
°K. Ida, T. Okano, T. Nakamura, A. Wakatsuki, S. Kitao\*, M. Seto\*, M. Matoba, Y. Kamihara (Keio Univ., \*Kyoto Univ.)
- 4pC-11 Giant atomic displacement and the magnetism of  $Mn_3O_4$  postspinel °S. Hirai, I. Fisher\* (HPSTAR, \*Stanford Univ.)
- 4pC-12 Resonance effect in white x-ray magnetic diffraction of  $GdAl_2$   
°H. Adachi, H. Kawata\*, M. Ito\*\* (Shinshu Univ., \*KEK, \*\*Gunma Univ.)
- 4pC-13 Van Vleck paramagnetism of lanthanoid oxyhydroxides °N. Wada, H. Samata (Kobe Univ.)
- 4pC-14 Synthesis of a Sr-based X-type hexaferrite and its magnetic properties  
°K. Kamishima, T. Mashiko, K. Kakizaki, M. Sakai, K. Watanabe\* (Saitama Univ., \*RIKEN)

#### Sep. 4/Room D

**Spin Injection into Semi-conductors** 9 : 30 ~ 11 : 00 Chair: T. Ochiai (Toshiba)

- 4aD-1 Analysis of Hanle-effect signals observed in three-terminal spin-accumulation devices  
°Y. Takamura, T. Akushichi, Y. Shuto, S. Sugahara (Tokyo Inst. Tech.)
- 4aD-2 Spin accumulation using CoFe/MgO and  $AlO_x/Si$  contacts with high quality tunnel barriers prepared by radical-oxygen annealing  
°T. Akushichi, Y. Takamura, Y. Shuto, S. Sugahara (Tokyo Inst. Tech.)
- 4aD-3 Preparation and characterization of a B2-ordered  $Co_2FeSi_{0.5}Al_{0.5}/MgO/Si$  spin injector  
°Y. Kawame, T. Akushichi, Y. Shuto, Y. Takamura, S. Sugahara (Tokyo Inst. Tech.)
- 4aD-4 Fabrication of a CoFe/ $TiO_2/Si$  tunnel contact and its application for spin injector  
°K. Takahashi, T. Akushichi, Y. Shuto, Y. Takamura, S. Sugahara (Tokyo Inst. Tech.)
- 4aD-5 Gate control of spin-valve signal and Hanle signal in GaAs observed by a four-terminal nonlocal geometry  
T. Miyakawa, T. Akiho, Y. Ebina, M. Yamamoto, °T. Uemura (Hokkaido Univ.)
- 4aD-6 Influence of nuclear magnetic resonance on transient oblique Hanle signals in GaAs  
°Y. Ebina, T. Akiho, M. Yamamoto, T. Uemura (Hokkaido Univ.)



- AMR** 11 : 15 ~ 12 : 00 Chair: T. Kubota (Tohoku Univ.)
- 4aD-7 Anisotropic magnetoresistance effect of anti-perovskite  $\text{Co}_3\text{FeN}$  thin films  
 $\circ$ H. Ando, H. Sakakibara, S. Kawai, K. Ueda, H. Asano (Nagoya Univ.)
- 4aD-8 Anisotropic magnetoresistance effect in pseudo single crystal  $\gamma'$ - $\text{Fe}_4\text{N}$  films ~degree of order dependence~  
 K. Kabara,  $\circ$ M. Tsunoda, S. Kokado\* (Tohoku Univ., \*Shizuoka Univ.)
- 4aD-9 Quantitative analysis of anisotropic magnetoresistance effect in half-metallic Heusler compounds films  
 $\circ$ Y. Sakuraba, S. Kokado\*, Y. Hirayama, T. Furubayashi, H. Sukegawa, S. Li, Y. Takahashi, K. Hono  
 (NIMS, \*Shizuoka Univ.)

- Heusler Device** 14 : 15 ~ 15 : 30 Chair: Y. Takamura (Tokyo Inst. Tech.)
- 4pD-1 Magnetoresistances Effects in  $\text{Co}_2(\text{Fe}, \text{Mn})(\text{Si}, \text{Al})$  Heusler Alloys  $\circ$ H. Yako, T. Kubota, K. Takanashi (Tohoku Univ.)
- 4pD-2 CPP-GMR using Cu-based bcc alloys for a spacer layer  $\circ$ T. Furubayashi, Y. Takahashi, K. Hono (NIMS)
- 4pD-3 Crystal orientation dependence of band matching in CPP-GMR pseudo spin-valves with  $\text{Co}_2\text{Fe}(\text{Ge}_{0.5}\text{Ga}_{0.5})$  Heusler alloy and NiAl spacer  $\circ$ J. Chen\*\*\*, T. Furubayashi\*\*, Y. K. Takahashi\*\*, K. Hono\*\*\* (\*Univ. Tsukuba, \*\*NIMS)
- 4pD-4 CPP-GMR pseudo spin-valves using ferromagnetic Heusler layer  $\text{Co}_2\text{Fe}(\text{Ga}_{0.5}\text{Ge}_{0.5})$  and nonmagnetic Heusler spacer  $\text{Cu}_2\text{CrAl}$   $\circ$ Y. Du\*\*\*, T. Furubayashi\*\*, Y. Takahashi\*\*, Y. Sakuraba\*\*, K. Hono\*\*\* (\*Univ. Tsukuba, \*\*NIMS)
- 4pD-5 High power spin torque oscillator using a  $\text{Co}_2(\text{Fe}, \text{Mn})\text{Si}$  alloy  
 $\circ$ T. Seki, Y. Sakuraba, H. Arai\*, H. Imamura\*, K. Takanashi (Tohoku Univ., \*AIST)

- MRAM** 15 : 45 ~ 16 : 45 Chair: H. Sukegawa (NIMS)
- 4pD-6 Operating principle of a three-terminal domain wall device with perpendicularly magnetized Ta/CoFeB/MgO free layer  
 $\circ$ H. Tanigawa, T. Suzuki, K. Suemitsu, N. Ohshima, T. Kitamura, T. Ohkochi\*, M. Kotsugi\*, T. Kinoshita\*,  
 T. Koyama\*\*, D. Chiba\*\*, Y. Yoshimura\*\*\*, K. Ueda\*\*\*, T. Ono\*\*\*, E. Kariyada  
 (RSMC, \*JASRI, \*\*Univ. Tokyo, \*\*\*Kyoto Univ.)
- 4pD-7 Writing properties of domain wall MRAM devices using one step etching process for MTJ films  
 $\circ$ K. Suemitsu, T. Suzuki, H. Tanigawa, T. Kitamura, E. Kariyada (RSMC)
- 4pD-8 MR-loops of perpendicularly magnetized MTJ with CoPt/Ru/CoPt reference layer  
 $\circ$ A. Fukushima, K. Yakushiji, M. Konoto, H. Kubota, H. Imamura, S. Yuasa (AIST)
- 4pD-9 MR element fabrication with lift-off process by dry ice blaster  $\circ$ K. Miyake, M. Tsunoda, M. Sahashi (Tohoku Univ.)

- MTJ** 17 : 00 ~ 17 : 45 Chair: H. Tanigawa (RSMC)
- 4pD-10 Lattice-matched magnetic tunnel junctions using Heusler alloy  $\text{Co}_2\text{FeAl}$  and spinel Mg-Al-O barrier  
 $\circ$ H. Sukegawa\*, S. Thomas\*\*\*, T. Furubayashi\*, Z. Wen\*, K. Inomata\*, S. Mitani\*\*\* (\*NIMS, \*\*Univ. Tsukuba)
- 4pD-11 Fabrication of magnetic tunnel junctions with  $(\text{Fe}, \text{Co})_4\text{N}$  films  $\circ$ K. Kabara, M. Tsunoda (Tohoku Univ.)
- 4pD-12 Improvement in the wettability of an Fe layer grown on MgO by insertion of an ultrathin Fe oxide layer  
 $\circ$ T. Nozaki\*\*\*\*, T. Okubo\*\*, Y. Shiota\*\*\*\*\*, H. Kubota\*\*\*\*\*, A. Fukushima\*\*\*\*\*, K. Hono\*\*,  
 Y. Suzuki\*\*\*\*\*, S. Yuasa\*\*\*\*\* (\*AIST, \*\*NIMS, \*\*\*Osaka Univ., \*\*\*\*JST-CREST)

**Sep. 4/Room E**

- Thin Film II** 9 : 00 ~ 10 : 15 Chair: Y. Yasukawa (Chiba Inst. Tech.)
- 4aE-1 Magnetic properties of Rh/FeCo film grown on MgO(001) substrate  
 H. Omiya,  $\circ$ S. Yoshida, B. Wang, S. Kanatani, K. Takahashi, A. Arakawa,  
 T. Hasegawa, S. Saito\*, S. Ishio (Akita Univ., \*Tohoku Univ.)
- 4aE-2 Crystalline structure and surface/bulk magnetic anisotropy in FePt/FeCo bilayer films  
 $\circ$ B. Wang, H. Oomiya, S. Yoshida, A. Arakawa, H. Sasaki, A. Sakuma\*, S. Ishio (Akita Univ., \*Tohoku Univ.)
- 4aE-3 Effect of lattice distortion on magnetic phase transition on  $L1_0$  FePt- $M$  ( $M=\text{Mn}, \text{Rh}$ ) thin film  
 $\circ$ S. Kimura, H. Yamada, T. Hasegawa, A. Arakawa, S. Ishio (Akita Univ.)
- 4aE-4 Preparation and magnetic properties of FeCo films by using Fe/Co superlattices  
 $\circ$ K. Shintaku, S. Fujishima\*, S. Ishio\* (AIT, \*Akita Univ.)

4aE-5 Tetragonal distortion and magnetic anisotropy of [FeCo/Pt] multilayer films  
°S. Fujishima, K. Shintaku\*, S. Ishio (Akita Univ., \*AIT)

**Thin Film III** **10 : 30 ~ 12 : 00** Chair: K. Shintaku (AIT)

- 4aE-6 Effect of magnetostatic interaction on magnetic properties of CoPt/Pt/CoPt thin films  
°K. Hayakawa, H. Kawamura, N. Nomiya, R. Sugita (Ibaraki Univ.)
- 4aE-7 Lattice distortion effect on magnetocrystalline anisotropy in corundum-type Cr<sub>2</sub>O<sub>3</sub> °Y. Kota, H. Imamura (AIST)
- 4aE-8 Preparation and characterization of Co-ferrite thin films on MgO(100) substrate by metal organic decomposition method  
°M. Ninomiya, M. Sasaki, T. Tsurui, K. Shinozaki, T. Komatsu, T. Ishibashi (Nagaoka Univ. Tech.)
- 4aE-9 Relationship between Fe/Ni Composition and Crystal Structure in the Ni-Fe Thin Films Deposited on Cr(211) Underlayer  
°S. Minakawa, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 4aE-10 Structural analysis of epitaxial FePt alloy thin films deposited on underlayers with different crystal structures  
°Y. Numata, M. Ohtake, M. Futamoto, F. Kirino\*, N. Inaba\*\* (Chuo Univ., \*Tokyo Univ. Arts, \*\*Yamagata Univ.)
- 4aE-11 Structure analysis of Fe, Co, and Ni thin films with bcc structure formed on GaAs(111) substrates  
°T. Soda, S. Minakawa, M. Ohtake, M. Futamoto, N. Inaba\* (Chuo Univ., \*Yamagata Univ.)

**Thin Film IV** **14 : 15 ~ 15 : 45** Chair: S. Saito (Tohoku Univ.)

- 4pE-1 Structure and magnetic properties of meso-porous silica thin films with Co nano particles  
°H. Kato, T. Haeiwa (Shinshu Univ.)
- 4pE-2 Preparation of Bi<sub>2</sub>YFe<sub>5</sub>O<sub>12</sub> and BiGd<sub>2</sub>Fe<sub>5</sub>O<sub>12</sub> magnetic garnet thin films by metal organic decomposition method on GGG and glass substrate  
°D. A. Wahid, T. Hattori, J. Sato, H. Shimizu (TUAT)
- 4pE-3 Strain effect on magnetic phase transition of FeRh alloy system/BaTiO<sub>3</sub> heterostructures  
°I. Suzuki, M. Itoh, T. Taniyama (Tokyo Inst. Tech.)
- 4pE-4 Magnetization process of Fe layer in Fe<sub>3</sub>O<sub>4</sub>/Cr/Fe multilayers  
°T. Nagahama, T. Kawai, N. Takahashi, T. Yanase, T. Shimada (Hokkaido Univ.)
- 4pE-5 Change in magnetism of ferromagnetic Pd(100) ultra thin film by phase transition of the substrate  
°S. Sakuragi, H. Tajiri\*, T. Sato (Keio Univ., \*JASRI/Spring-8)
- 4pE-6 Theoretical evaluation with respect to perpendicular magnetic anisotropy of bct-Fe<sub>50</sub>Co<sub>50</sub> stacked on Rh  
°K. Hyodo, Y. Kota\*, A. Sakuma (Tohoku Univ., \*AIST)

**Thin Film V** **16 : 00 ~ 17 : 30** Chair: S. Ishio (Akita Univ.)

- 4pE-7 TbFe layer thickness dependences of perpendicular anisotropy and damping constant for amorphous GdFeCo/TbFe bilayer  
°T. Higashide, B. Dai, T. Kato, S. Iwata, S. Tsunashima\* (Nagoya Univ., \*NISRI)
- 4pE-8 VNA-FMR of perpendicular magnetic CoPt/Ru films  
°Y. Kusanagi, S. Okamoto, N. Kikuchi, O. Kitakami, T. Kato\*, S. Iwata\* (Tohoku Univ., \*Nagoya Univ.)
- 4pE-9 Structure and magnetic properties of MBE grown CoPt-Ag and CoPd-Ag films  
°T. Nagata, Y. Tokuoka, Y. Seto, T. Kato, S. Iwata (Nagoya Univ.)
- 4pE-10 Growth temperature dependence of magnetic properties on (Co,Fe)<sub>3</sub>O<sub>4</sub>(001) epitaxial films with perpendicular magnetic anisotropy  
Y. Utsumi\*, T. Niizeki\*\*\*, Jun-ichiro Inoue\*, °H. Yanagihara\*, E. Kita\*  
(\*Univ. Tsukuba, \*\*Tohoku Univ.)
- 4pE-11 Magnetic Properties of NiFe<sub>2</sub>O<sub>4</sub>(001) epitaxial films grown by reactive magnetron sputtering  
J. Morishita, R. Patel, K. Suzuki, T. Niizeki, °H. Yanagihara, E. Kita (Univ. Tsukuba)
- 4pE-12 Determination of cation site occupancies in cobalt-ferrite (001) thin films with high perpendicular magnetic anisotropy  
°T. Niizeki, Y. Utsumi, H. Yanagihara, J. Inoue, G. Shibata\*, T. Kadono\*, M. Sakamaki\*\*, K. Amemiya\*\*,  
T. Koide\*\*, E. Kita (Univ. Tsukuba, \*Univ. Tokyo, \*\*KEK)

**Sep. 4/Room F**

**Medical Treatments II** **9 : 00 ~ 10 : 30** Chair: H. Mamiya (NIMS)

- 4aF-1 Multi-functionalization of capsule endoscope using rotating magnetic field  
°S. Murata, R. Adachi, T. Honda (Kyushu Inst. Tech.)

- 4aF-2 Development of anchoring mechanism for capsule endoscope using rotating magnetic field  
°R. Yoshimura, T. Honda (Kyushu Inst. Tech.)
- 4aF-3 Magnetic actuator and excitation system for intravascular treatment  
°M. Takahashi, Y. Taira, T. Yamada, Y. Takemura (Yokohama National Univ.)
- 4aF-4 Effect of ELF magnetic fields on anticancer drug potency against human lung cancer cell line  
°T. Ushimaru, M. Kakikawa, S. Yamada (Kanazawa Univ.)
- 4aF-5 Effects of hyperthermia using cultured cell by entrainment of cell cycle and antibody-conjugated magnetic nanoparticles  
°R. Makita, S. Akaike, T. Matsumoto, T. Seino, S. Ota, T. Yamada, Y. Takemura (Yokohama National Univ.)
- 4aF-6 Effects of coil and core shape of the magnetic circuit type alternating magnetic field generator on magnetic field in core gap  
°Y. Saeki, T. Nakagawa, S. Seino, T. Yamamoto (Osaka Univ.)

### Hyperthermia

10 : 45 ~ 12 : 15

Chair: T. Yoshida (Kyushu Univ.)

- 4aF-7 Energy dissipation of superparamagnetic suspensions in correlation with their nonlinear response of dynamic magnetization  
°S. B. Trisnanto, Y. Kitamoto (Tokyo Inst. Tech.)
- 4aF-8 Evaluation of magnetization distribution of magnetic nanoparticles by magnetization measurement and estimation of heating ability of them under alternating magnetic fields °T. Nakagawa, K. Watanabe, S. Seino, T. Yamamoto (Osaka Univ.)
- 4aF-9 Calorific value estimation of (La, Sr, Mn, Cu)<sub>2</sub>O<sub>3</sub> by measurements of hysteresis loop in alternating magnetic field  
°H. Kado, T. Nakagawa, S. Seino, T. Yamamoto (Osaka Univ.)
- 4aF-10 Measurement of AC hysteresis curves of magnetic nanoparticles and their magnetic loss  
S. Ota, T. Yamada, °Y. Takemura (Yokohama National Univ.)
- 4aF-11 Evaluation of heat value of magnetic nanoparticles in cultured cells  
°S. Ota, T. Yamada, Y. Takemura (Yokohama National Univ.)
- 4aF-12 Dynamic hysteresis loops and heat generation of magnetic nanoparticles for hyperthermia  
°K. Ota, A. Seki, D. Isaka, A. Horiuchi, M. Kishimoto, H. Yanagihara, E. Kita, H. Mamiya\* (Univ. Tsukuba, \*NIMS)

### Symposium "Creation of novel materials and new analytical system using external magnetic field"

Chief Organizer: A. Sugiyama (Waseda Univ.)

14 : 15 ~ 15 : 45

Chair: R. Aogaki (Politechnic Univ.)

- 4pF-1 Magnetic field effects on colloids and surface phenomena °S. Ozeki (Shinshu Univ.)
- 4pF-2 Chiral surface formation by magnetoelectrolysis °I. Mogi (Tohoku Univ.)
- 4pF-3 Diamagnetic responses in biogenic micro crystals and possible application for micromirror device  
°M. Iwasaka (Hiroshima Univ.)

16 : 00 ~ 17 : 30

Chair: M. Tanaka (AIST)

- 4pF-4 Single crystal structure analysis of magnetically oriented powder crystal  
°C. Tsuboi, S. Higuchi, K. Aburaya\*, F. Kimura, M. Maeyama\*, T. Kimura (Kyoto Univ., \*Rigaku)
- 4pF-5 Influences on the crystallization kinetics of iron-based amorphous alloys under high magnetic fields  
°R. Onodera, S. Kimura, K. Watanabe, Y. Yokoyama, A. Makino, K. Koyama\* (Tohoku Univ., \*Kagoshima Univ.)
- 4pF-6 Development of new in-field analytical system and synthesis of ferromagnetic materials under high magnetic fields  
°K. Koyama (Kagoshima Univ.)

### Sep. 5/Room A

#### Symposium "Nano spin conversion science"

Chief Organizer: T. Ono (Kyoto Univ.)

9 : 00 ~ 10 : 00

Chair: T. Ono (Kyoto Univ.)

- 5aA-1 Nano-scale spin conversion science °Y. Otani\*\* (\*Univ. Tokyo, \*\*RIKEN)
- 5aA-2 Electric spin conversion phenomena °M. Shiraishi (Kyoto Univ.)

10 : 15 ~ 11 : 45

Chair: T. Saito (Toshiba)

- 5aA-3 Coupling between single photons and single electron spins via angular momentum transfer in quantum dots  
°A. Oiwa (Osaka Univ.)
- 5aA-4 Spin current generation from heat and mechanical motion °E. Saitoh\*\*\* (\*Tohoku Univ., \*\*JAEA)

5aA-5 Theory on spin conversion function: Topological engineering of magnons S. Murakami (Tokyo Inst. Tech.)

**Sep. 5/Room B**

**Magnets and Processing**

10 : 00 ~ 11 : 15

Chair: M. Sahashi (Tohoku Univ.)

- 5aB-1 Stability of  $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> in hydrogenous atmospheres  
°S. Yamamoto\*, R. Gallage\*\*\*, S. Isoda\*, Y. Ogata\*\*\*, N. Kobayashi\*\*, T. Ogawa\*\*\*, M. Takahashi\*\*\*, M. Takano\*\*\*\*  
(\*Kyoto Univ., \*\*T&T Innovations, \*\*\*Tohoku Univ., \*\*\*\*Okayama Univ.)
- 5aB-2 Synthesis of FeNi alloy powder by electrolysis in molten-salt (Effect of electrode)  
°Y. Hayashi, M. Mizuguchi\*, K. Sato\*, J. Hasegawa, T. Konno\*, K. Takanashi\* (DENSO, \*Tohoku Univ.)
- 5aB-3 Trial manufacture of alloy based permanent magnet wires by means of in-rotating liquid spinning technique  
°T. Honda, T. Todaka (Oita Univ.)
- 5aB-4 Low Curie temperature magnet for refrigeration sensor tag  
°T. Watanabe, Y. Morimoto, M. Takezawa, T. Matsushita\*, R. Noda\*\* (Kyushu Inst. Tech., \*LINTEC, \*\*CDN)
- 5aB-5 Near-contact imaging of DC magnetic field on hard magnet materials with alternating magnetic force microscopy  
Y. Kinoshita, S. Nakayama, G. Egawa, S. Yoshimura, °H. Saito (Akita Univ.)

**Sep. 5/Room C**

**Magnetic Anisotropy and Magneto-Striction I**

9 : 00 ~ 10 : 30

Chair: E. Kita (Univ. Tsukuba)

- 5aC-1 Perpendicular magnetic anisotropy behavior of CoFeB/MgO multilayers by spin/orbital specific magnetization measurement  
°M. Yamazoe, T. Kato, S. Takubo, K. Suzuki, K. Hoshi, \*M. Itou, \*Y. Sakurai, H. Sakurai (Gunma Univ., \*JASRI/SPring-8)
- 5aC-2 Magnetic switching behavior by different magnetic quantum number in Au/Fe/MgO multilayer using spin/orbital specific magnetization measurement  
°K. Suzuki, S. Takubo, T. Kato, M. Yamazoe, K. Hoshi, Y. Homma\*, M. Itou\*\*, Y. Sakurai\*\*, H. Sakurai (Gunma Univ., \*Tohoku Univ., \*\*JASRI/SPring-8)
- 5aC-3 Spin/Orbital/Element specific hysteresis curve of TbCo perpendicular magnetic anisotropy film with a high squareness ratio  
°S. Takubo, A. Agui\*, X. Liu\*\*, K. Suzuki, H. Sakurai (Gunma Univ., \*JAEA, \*\*Shinshu Univ.)
- 5aC-4 First principles study of light-element doping effects on L1<sub>0</sub>-ordered FeNi  
°M. Tsujikawa, Y. Miura\*, M. Shirai (Tohoku Univ., \*Kyoto Inst. Tech.)
- 5aC-5 Effect of magnetocrystalline anisotropy on magneto-strictive behavior for Fe-Si single-crystal films  
°T. Kawai, T. Aida, M. Ohtake, M. Futamoto (Chuo Univ.)
- 5aC-6 Perpendicular magnetic anisotropy of Co<sub>2</sub>Fe<sub>x</sub>Mn<sub>1-x</sub>Si Heusler alloy ultrathin-films  
°J. Kim, T. Kubota, A. Tsukamoto\*, S. Takahashi\*\*, Y. Sonobe\*\*, K. Takanashi (Tohoku Univ., \*Nihon Univ., \*\*Samsung Research Inst. Jpn.)

**Magnetic Anisotropy and Magneto-Striction II**

10 : 45 ~ 12 : 15

Chair: A. Agui (JAEA)

- 5aC-7 Anisotropy field and ferromagnetic resonance equation of in-plane uniaxial anisotropy film  
°O. Kohmoto, Y. Matsushima\* (Resona Lab., \*Okayama Univ.)
- 5aC-8 Magnetic anisotropy and magnetoelasticity of Cobalt-ferrites °J. Inoue, H. Yanagihara, E. Kita (Univ. Tsukuba)
- 5aC-9 Control of uniaxial anisotropy in Co ferrite by the misfit-induced distortion  
°M. Oka, Y. Utsumi, H. Yanagihara, E. Kita (Univ. Tsukuba)
- 5aC-10 First principle study of magnetocrystalline anisotropy in hcp Co with stacking faults  
°T. Komine, S. Saito\* (Ibaraki Univ., \*Tohoku Univ.)
- 5aC-11 Broadband spectroscopy of magnetic response excited by microwave or mechanical stress in micron- or nano-scale magnet  
°T. Yamamoto, Y. Matsui, K. Tanaka, T. Saiki\*, Y. Utsumi, Y. Nozaki\*\*, A. Yamaguchi (Univ. Hyogo, \*Hyogo Pref. Inst. of Tech., \*\*Keio Univ.)
- 5aC-12 Preparation and properties of Co-ferrite films with perpendicular magnetic anisotropy  
°K. Shindoh, X. Liu (Shinshu Univ.)

## Sep. 5/Room D

### Sensor I

9 : 15 ~ 10 : 30

Chair: O. Ishii (Yamagata Univ.)

- 5aD-1 Highly sensitive magneto-impedance sensor using MEMS multi-core head  
°T. Uchiyama, N. Hamada\*, C. Cai\* (Nagoya Univ., \*Aichi Steel)
- 5aD-2 Enhancement of sensitivity in low frequency region on high-frequency carrier-type thin-film magnetic field sensor  
°S. Kamata, H. Kikuchi, T. Nakai\*, S. Hashi\*\*, K. Ishiyama\*\* (Iwate Univ., \*ITIM, \*\*Tohoku Univ.)
- 5aD-3 Flux gate sensor using amorphous magnetic core induced tensile stress  
H. Miyata, °R. Yamamoto\*, Y. Morimoto\*, M. Takezawa\* (MTI, \*Kyushu Inst. Tech.)
- 5aD-4 Development of thin film magnetic field sensor using SrTiO film  
°T. Kawakami, H. Uetake, S. Yabukami, T. Ozawa (Tohoku Gakuin Univ.)
- 5aD-5 Development of wide range typed MI element °A. Shimode, N. Hamada, M. Yamamoto (Aichi Steel)

### Sensor II

10 : 45 ~ 12 : 00

Chair: T. Uchiyama (Nagoya Univ.)

- 5aD-6 Measurement of domain wall motion in FeCoV compound wires for energy harvesting device  
°K. Mizoguchi, R. Serizawa, T. Yamada, S. Masuda, Y. Ogawa\*, S. Kouno\*, H. Kaneko\*, Y. Takemura (Yokohama National Univ., \*Nikkoshi)
- 5aD-7 An angular sensor with differential transformer structure using a ferrite ring partially shielded by a conductor ring  
°H. Urai (Hiroshima International Univ.)
- 5aD-8 Application of magnetic ribbon coated with polystyrene to a wireless organic solvent sensor  
°T. Suzuki, N. Kutsuzawa, O. Ishii (Yamagata Univ.)
- 5aD-9 Application of LC circuit adjacent to Mo thin film to a wireless ammonia sensor  
°T. Arai, N. Kutsuzawa, K. Koike, O. Ishii (Yamagata Univ.)
- 5aD-10 Application of magnetic ribbon coated with ethyl 2-cyanoacrylate to a wireless acetone sensor  
°S. Kondo, H. Horiuchi, T. Kaneta, N. Kutsuzawa, O. Ishii (Yamagata Univ.)

## Sep. 5/Room E

### Surface/Interface Magnetism

9 : 30 ~ 10 : 45

Chair: T. Nozaki (Tohoku Univ.)

- 5aE-1 Bcc-fcc structures in ultrathin Ni films on Fe(110) T. Kawasaki, °Toyo Kazu Yamada (Chiba Univ.)
- 5aE-2 Engineering of 300 K single organic molecular magnetic junction  
°T. Yamada, Y. Yamagishi, Y. Kitaoka\*, K. Nakamura\* (Chiba Univ., \*Mie Univ.)
- 5aE-3 Electron spin states of graphene/nickel interface investigated at atomic-layer scale  
°S. Sakai\*, Y. Matsumoto\*\*, S. Entani\*, H. Naramoto\*, A. Koide\*\*\*, T. Fujikawa\*\*\*, Y. Yamauchi\*\*\*\*, K. Amemiya\*\*\*\*\* (\*JAEA, \*\*CROSS, \*\*\*Chiba Univ, \*\*\*\*NIMS, \*\*\*\*\*KEK)
- 5aE-4 Irradiated laser wavelength dependence on magnetic properties of an FeAl alloy  
Y. Yoshida, S. Watanabe, °H. Kaiju, J. Nishii, K. Yoshimi\* (Hokkaido Univ., \*Tohoku Univ.)
- 5aE-5 Perpendicular exchange bias using magneto-electric  $\alpha$ -Cr<sub>2</sub>O<sub>3</sub>(0001) thin film with boundary magnetization  
°K. Toyoki, Y. Shiratsuchi, T. Nakamura\*, S. Harimoto, S. Onoue, H. Nomura, C. Mitsumata\*\*, R. Nakatani (Osaka Univ., \*JASRI/SPring-8, \*\*NIMS)

### Exchange Bias

11 : 00 ~ 12 : 15

Chair: Y. Shiratsuchi (Osaka Univ.)

- 5aE-6 Ferromagnetic domains and exchange bias in tensile-deformed Pt<sub>3</sub>Fe antiferromagnet  
°R. Morita, S. Kobayashi (Iwate Univ.)
- 5aE-7 Voltage control of exchange bias of Cr<sub>2</sub>O<sub>3</sub> thin film  
°T. Ashida, M. Oida, N. Shimomura, T. Nozaki, T. Shibata\*, M. Sahashi (Tohoku Univ., \*TDK)
- 5aE-8 Positive exchange bias in Cr<sub>2</sub>O<sub>3</sub>/Pt/Co thin film  
°M. Oida, T. Ashida, N. Shimomura, T. Nozaki, T. Shibata\*, M. Sahashi (Tohoku Univ., \*TDK)
- 5aE-9 Observation of Neel temperature of Cr<sub>2</sub>O<sub>3</sub> in Cr<sub>2</sub>O<sub>3</sub>/Co exchange coupled system  
°S.P. Pati, N. Shimomura, T. Ashida, M. Oida, T. Nozaki, T. Shibata\*, M. Sahashi (Tohoku Univ., \*TDK)
- 5aE-10 Controlling perpendicular exchange bias in 20nm-thickness Cr<sub>2</sub>O<sub>3</sub> thin-film by lattice strain control  
°N. Shimomura, S.P. Pati, T. Nozaki, T. Shibata\*, M. Sahashi (Tohoku Univ., \*TDK)

## 賛助会員 名簿 (50音順)

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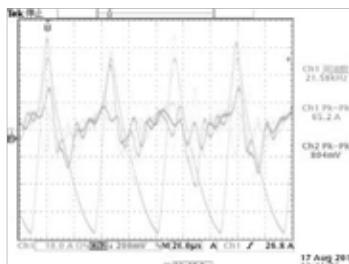
(2014.7.8現在)



## 短パルス・高周波磁場測定に特化したホール素子式ガウスメーター



測定例: 電磁調理器の漏れ磁場測定



測定波形

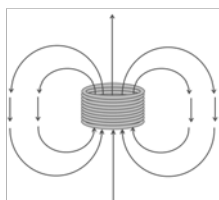
— コイル電流 10A/DIV  
— 発生磁場 20mT/DIV

### ホール素子磁気センサーの特徴

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

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

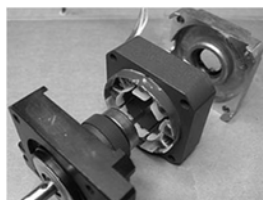
### 適用事例・測定のご提案



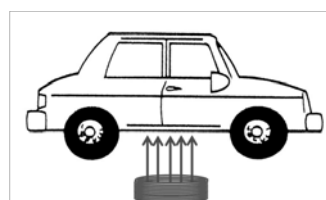
着磁パルス磁場



誘導加熱



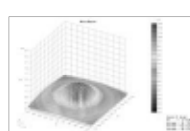
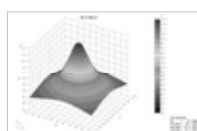
モーター、トランスの  
漏洩磁場



非接触給電

### 3次元磁場測定装置と受託測定のご提案

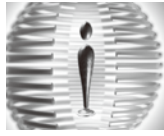
- 理論計算と実測の一致を目指しています。・・・・センサーと測定座標の整合性評価を行います。
- 測定の再現性を重視しています。・・・・センサーギャップ調整を自動化。
- 専門的な見地で受託測定及びレポートを作成・・・・トレーサビリティに対応しています。



ガウスメーターメーカーだから出来る正確な磁界分布測定を一度お試しください。

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### Technology Communication

磁気物性の研究開発・産業分野にジャストフィットなソリューションをクリエイト。  
東栄科学産業は開発型装置メーカーとして新しい技術にチャレンジしています。

# TOEISI

## 3次元空間磁界プロファイリング

感受幅約20 $\mu$ の  
1.5mm角3軸センサーで  
センシングし空間磁界を  
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永久磁石、磁気センサー、  
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多種多様な用途で  
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## 振動試料型磁力計 VSM

VSM新発想  
VSMとPC端末を  
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従来の装置に比べ、  
設置面積は約1/6\*  
総重量も約1/10\*と  
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しかも高機能、低価格を  
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## 非磁性全方位プローバー



## 面内磁界および垂直磁界プローバー



### 主要製品

- 磁気抵抗測定装置、
- TMR評価装置、
- 半導体用プローバー、
- 非磁性オートプローバー、
- 非磁性セミオートプローバー、
- 非磁性マニュアルプローバー、
- 非磁性高周波プローバー、
- 高周波プローブカード、
- 非磁性プローブカード

## 回転磁場中 熱処理装置



## 高感度薄膜 磁歪測定装置



## 高周波薄膜 透磁率測定装置



## 低残留磁界電磁石 電磁石

ヘルムホルツコイル、ソレノイドコイル、ワイズ型電磁石、Wヨーク型電磁石、  
ビッター型電磁石、ギャップ可変型電磁石、光学用コイル、ヘッドコイル、その他

## その他

磁気異方性測定装置、動的微分磁化率測定装置、  
ホール効果測定装置、蓄磁脱磁処理装置、ガウスメーター

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現代講座・磁気工学

【各巻A5判・上製本】

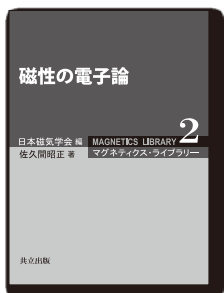


本シリーズは、学部上級生から修士・若手技術者を主対象に、磁気工学における新機軸の研究対象と基礎的要素を結びつける教科書として企画・刊行。

- ① **磁気工学入門** —磁気の初歩と単位の理解のために—  
高梨弘毅著……………132頁・本体2,800円
- ② **磁気工学の解析法**  
三俣千春著……………240頁・本体3,400円
- ③ **スピントロニクス** —基礎編—  
井上順一郎・伊藤博介著……………296頁・本体3,600円
- ④ **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
- ⑤ **電磁気学応用**  
早乙女英夫他著……………続 刊

マグネティクス・ライブラリー

【各巻A5判・上製本】



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

- ① **磁気の付随現象とその応用**  
井上光輝著……………続 刊
- ② **磁性の電子論** 日本磁気学会『平成25年度出版賞』受賞  
佐久間昭正著……………356頁・本体5,000円
- ③ **反強磁性体** —応用への展開—  
深道 and 明著……………344頁・本体5,000円
- ④ **垂直磁気記録**  
岩崎俊一・中村慶久・大内一弘・村岡裕明・青井 基著……………続 刊

マグネティクス・イントロダクション 全5巻 【各巻A5判・並製本】



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

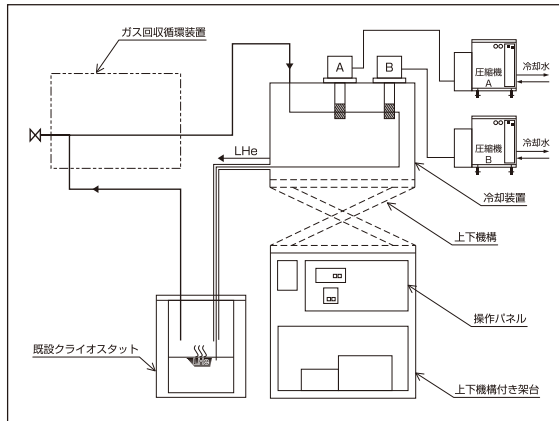
- ① **磁気工学超入門** —ようこそ、まぐねの国へ—  
佐藤勝昭著……………168頁・本体2,500円
- ② **メタマテリアル** —光と磁気の不思議な関係—  
富田知志他著……………続 刊
- ③ **物質の中の磁気と光**  
澤田 桂著……………続 刊
- ④ **環境保全に貢献する高磁場技術**  
廣田憲之他著……………続 刊
- ⑤ **さまざまなところで活躍する磁気センサ**  
藪上 信他著……………続 刊

# ヘリウム再凝縮装置 TRGシリーズ



- 液体ヘリウム節約
- トランスファー操作不要
- 既存クライオスタット取付可能

〈フロー図〉



〈装着例〉



〈仕様〉

形式	TRG-375DS	TRG-340DS
再凝縮能力	18L/day	10L/day
ユーティリティ	電力容量：24kVA 冷却水：14L/min以上	
設置スペース	2,200(W)×2,300(D)×2,500(H)	
定期メンテナンス	冷凍機ユニット 10,000時間 圧縮機ユニット 30,000時間 ドライポンプ 10,000時間	

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**大陽日酸株式会社** 産業ガス事業本部 特販事業部

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## 無冷媒型超電導磁石

- 液体ヘリウムを使用しない4K GM冷凍装置の採用により、操作は極めて簡単です。
- ソレノイドタイプ、スプリットペア(ヘルムホルツコイル)タイプご希望の仕様に合せまして、特殊品の設計・製作を行います。



ソレノイドコイル型  
小型超電導磁石

### 《特徴》

- \* 軽量、コンパクトで設置場所を選びません。
- \* 奥行き200mmと大変スリムで、光学測定に最適です。

### 《仕様》

- \*コイル : ソレノイドコイル
- \*発生磁界 : 5T
- \*均一度 : 0.1%/10mmDSV
- \*室温ポア径 :  $\phi$ 50.8mm(2インチ)
- \*電流 : 100A
- \*励磁速度 : 5T/10分
- \*冷凍機 : 0.4W GM冷凍機
- \*寸法 : W280mm×D200mm×H590mm(冷凍機除く)
- \*重量 : 約60kg

### 《仕様》

- \*コイル : スプリットペア(ヘルムホルツコイル)
- \*発生磁界 : 7T
- \*均一度 : 0.1%/10mmDSV
- \*室温ポア径 :  $\Phi$ 50mm
- \*電流 : 96A
- \*冷凍機 : 1.5W GM冷凍機
- \*寸法 :  $\Phi$ 835mm×H500mm(冷凍機、突起部除く)

### \*オプション装置

GP-IBコンピュータコントロール回転台付き上下動台車

### 〈システム参考写真〉

磁気シールドルーム内、  
超電導磁石式  
振動試料型磁力計併用型  
磁気異方性トルク計システム



手前:VSM  
奥:トルク計

### 7.5T ソレノイドコイル型 超電導磁石式振動試料型磁力計



◎ 受託測定  
磁性材料のサンプル測定も行っております。社内に各種システム製品を常設しておりますので、当社製品の評価用として、是非一度お問合せください。  
また、詳細はホームページをご覧ください。

### 主な営業品目

- 電磁石各種(Wヨーク型・YS型・その他特注応用型)○ソレノイドコイル○ヘルムホルツコイル○超電導マグネット
- 振動試料型磁力計○磁気異方性トルク計○磁歪測定装置○BHトレーサー○磁場中熱処理装置○磁場中成形油圧プレス
- 交流・直流各種定電流電源システム○その他磁界発生装置を用いた製造・測定システムの設計・製作・販売

**株式会社玉川製作所** / 〒982-0014 仙台市太白区大野田3丁目10番19号  
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# デジタル技術で直接描画をリードする

マスクレス露光装置

## D-light DL-1000 Series



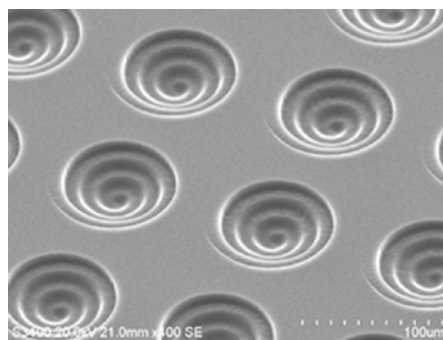
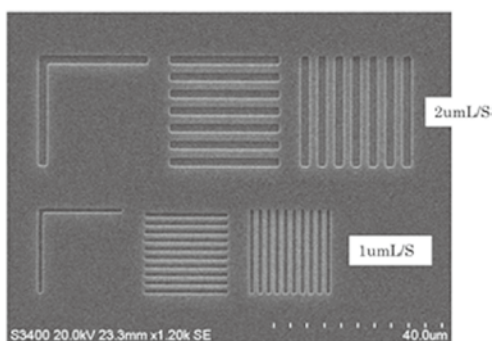
空間光変調器 DMD (Digital Micromirror Device) を用いたパターン縮小投影技術で、最小画素  $1\mu\text{m}$  にて自由度の高いパターン描画を実現。

数ミリ角の微小基板上のターゲットに対して、位置を確認しながら電極パターンを投影することができます。

また、レジストの精密三次元加工が行えるグレースケール露光機能は市場の新たなニーズにお応えします。

ナノエレクトロニクス・半導体・MEMS・ $\mu\text{TAS}$  などの研究開発分野に加え精密転写用型の試作、少量多品種のデバイス製造へと応用が広がります。

DL-1000 シリーズは圧倒的なパフォーマンスで直接描画をリードします。



Nano  
System Solutions

<http://www.nanosystem-solutions.com>

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