

Technical Program

MORIS2011

Jun. 16 (Tue.)

- 8:50 ~ 9:00 **Opening Remarks**
Prof. Katsuji Nakagawa
- 9:00 ~ 10:15 **Tu-01 Fast Reversal Phenomena**
Presider Dr. Takeshi Kato
- 9:00
Tu-01-01 Controlling Magnetism by Light
Th. Rasing (Radboud University Nijmegen, *The Netherlands*)
- 9:25
Tu-01-02 Photo-Induced Magnetization in Nickel Oxide
T. Satoh, S.-J. Cho, T. Shimura, K. Kuroda, H. Ueda, Y. Ueda (University of Tokyo, *Japan*)
- 9:50
Tu-01-03 Magnetization Dynamics of Ferromagnetic Nanostructures Studied with Femtosecond Optical Pulses
J.-Y. Bigot "University of Strasbourg - CNRS, France"
- 10:15 ~ 10:30 Coffee Break
- 10:30 ~ 11:45 **Tu-02 New Magnetic Materials**
Presider Prof. Katsuji Nakagawa
- 10:30
Tu-02-01 Spin-Dependent Transport in Graphene-Based Spin Valves
M. Shiraishi (Osaka University, *Japan*)
- 10:55
Tu-02-02 Ferromagnetic Features in Asymmetric Nano Graphene Molecule
N. Ota, N. Gorjizadeh*, Y. Kawazoe* (Hitachi Maxell Ltd., *Japan*, *Tohoku Univ., *Japan*)
- 11:20
Tu-02-03 Magnetic Properties of One-Dimensional Organometallic Clusters
A. Nakajima (Keio University, *Japan*)
- 12:10 ~ 14:00 Lunch
- 14:00 ~ 16:05 **Tu-03 Functional Material & Devices**
Presider Prof. Ryoichi Nakatani
- 14:00
Tu-03-01 Three-Dimensional Optical Metamaterials as Model Systems for Longitudinal and Transverse Magnetic Coupling
N. Liu, H. Giessen (Universitat Stuttgart, *Germany*)
- 14:25
Tu-03-02 Magnetic Metamaterials and Their Fabrication Technique
T. Tanaka (RIKEN Advanced Science Institute, *Japan*)
- 14:50
Tu-03-03 Study on Magnetization Reversal in Ni-Fe Nanowires with Several Notches Using a MFS-MFM Measurement
Y. Endo, Y. Mitsuzuka, M. Watanabe, M. Yamaguchi (Tohoku University, *Japan*)
- 15:15
Tu-03-04 Exchange Coupling of Ultrathin Co Film and Antiferromagnetic Cr₂O₃(0001)
Y. Shiratsuchi, T. Nakatani, S. Kawahara, R. Nakatani (Osaka University, *Japan*)

15:40

TuP-03-05 Magnetization Switching Experiment on a Single Co/Pt Multilayer Dot in Nanosecond Pulse Field
N. Kikuchi, S. Okamoto, O. Kitakami (Tohoku University, *Japan*)

16:05 ~ 18:30 **TuP-03 Poster Session**

Presider Dr. Ariyoshi Nakaoki

[Magnetics & Magnetic Materials]

TuP-03-01 Magnetic Properties of L12-Type CrPt₃(111) Thin Films Having Different Order Parameter
Y. Shiratsuchi, M. Yamashita, R. Nakatani, M. Yamamoto (Osaka University, *Japan*)

TuP-03-02 Domain Structure in Ultrathin Cobalt Films Grown on a Vicinal Silicon Substrate
A. Stupakiewicz, E. Y. Vedmedenko*, A. Fleurence**, T. Maroutian**, P. Beauvillain**, A. Maziewski, R. Wiesendanger* (University of Bialystok, *Poland*, *University of Hamburg, *Germany*, **Universite Paris-Sud, *France*)

TuP-03-03 Magnetization Reversal Time in Ferromagnetic and Ferrimagnetic Materials
T. Kobayashi, Y. Fujiwara (Mie University, *Japan*)

TuP-03-04 Large Magnetic Anisotropy in Epitaxially Grown Fe/Co Multilayer and Alloy
S. Okamoto, T. Shinozaki, T. Yamashita, N. Kikuchi, O. Kitakami (Tohoku University, *Japan*)

TuP-03-05 Magnetic Anisotropies of Ultrathin Co Film on SrTiO₃(001)
Y. Shiratsuchi, K. Hisatomi, R. Nakatani (Osaka University, *Japan*)

TuP-03-06 Perpendicular Anisotropy and Microstructure of MBE-Grown FePt-Ag and FePt-MgO Granular Films
R. Ikeda, M. Kagami, T. Kato, S. Iwata, S. Tsunashima (Nagoya University, *Japan*)

TuP-03-07 Measurements of Magnetic Damping Property in Ferrimagnetic GdFeCo Alloy
A. Tsukamoto, K. Kajiyama, S. Kawamura, T. Sato, T. Shimizu, A. Itoh (Nihon University, *Japan*)

TuP-03-08 Double-Layered FePt-C/FeTaC Thin Films for Perpendicular Magnetic Recording
A. Perumal, Y. K. Takahashi, Li Zhang, K. Hono (National Institute for Materials Science, *Japan*)

TuP-03-09 Magnetic Structures of Exchange Coupled Co/Ru Multilayers Investigated by Resonant X-Ray Magnetic Scattering
R. Yamagishi, K. Kodama, T. Koike, N. Hosoito (Nara Institute of Science and Technology, *Japan*)

[Functional Material & Devices]

TuP-03-10 Carrier-to-Noise Ratio in Magneto-Optic Transfer Readout Using Magnetic Garnet Film
T. Nomura, M. Kishida*, N. Hayashi*, K. Iwasaki**, H. Umezawa** (Shizuoka Inst. Sci. & Tech., *Japan*, STRL NHK, *Japan*, FDK Corporation, *Japan*)

TuP-03-11 Magneto-Optical Responses of Magnetic Garnet Films with Au Particles
Y. Mizutani, H. Uchida, A. Baryshev, M. Inoue (Toyohashi University of Technology, *Japan*)

TuP-03-12 Evaluation of Domain-Wall Pinning Depends on Permalloy Nanowire Width at The Constriction
T. Nagayama, D. Yokota, H. Nomura, R. Nakatani (Osaka University, *Japan*)

TuP-03-13 Nanodot Array Fabrication by Means of Nanoindentation Method
T. Hashimoto, N. Kikuchi, S. Okamoto, O. Kitakami (Tohoku University, *Japan*)

TuP-03-14 Application of Si-N Insulation Layer to CPP-GMR Device
N. Funabashi, K. Aoshima, K. Machida, K. Kuga, N. Shimidzu, S. Nakagawa*

- (Japan Broadcasting Corporation, *Japan*, *Tokyo Institute of Technology, *Japan*)
- TuP-03-15 Magnetization Manipulation Method for Magnetic Logic Gate by Magnetic Force Microscopy
H. Nomura, M. Kusukawa, T. Nagayama, D. Yokota, R. Nakatani (Osaka University, *Japan*)
- TuP-03-16 Nonreciprocal Semiconductor Laser Diodes for Bistable Optical Flip-Flop Memories
T. Mori, S. Goto, K. Okada, Y. Kono, H. Shimizu (Tokyo University of Agriculture and Technology, *Japan*)
- TuP-03-17 Development of Magnetoresistance Devices Utilizing Vertically Aligned Carbon Nanotubes
D. Hisada, Y. Fujiwara, H. Sato, M. Jimbo*, T. Kobayashi (Mie University, *Japan*, *Daido Institute of Technology, *Japan*)
- TuP-03-18 Tunnel Magneto Resistance Effect of CoFeAlSi - MgO Granular Films
K. Sato, Y. Fujiwara, M. Jimbo, T. Kobayashi (Mie University, *Japan*)
- TuP-03-19 Switching Processes and Core Anomalous Trajectories of Spin Vortices in Cylindrical Magnetic Nanodisks
R. Antos, Y. Otani* (Charles University in Prague, *Czech Republic*, *University of Tokyo, *Japan*)
- TuP-03-20 Magnetic Properties of PFV Encapsulating Ni Ions
Y. Shiratsuch, F. Nishiura, K. Tachibori, A. Higashiura, A. Nakagawa, R. Nakatani, T. Tsukihara, M. Yamamoto (Osaka University, *Japan*)
- TuP-03-21 Preparation of Spin-Filtering Tunnel Junctions Using Ferromagnetic Insulator $\text{La}_2\text{NiMnO}_6$ on MgO Substrates
M. A. Tanaka, Y. Shiji, T. Katsuragi, Y. Miyazaki, K. Mibu (Nagoya Institute of Technology, *Japan*)
- TuP-03-22 Spin Transfer Switching and Interlayer Coupling in GMR Structures with GdFeCo Free Layer
T. Kozawa, T. Kato, S. Tsunashima, S. Iwata (Nagoya University, *Japan*)
- TuP-03-23 MR Properties of GdFe Based Current-Perpendicular-to-Plane Spin Valves and Interface Analyses
K. Aoshima, K. Kuga, N. Funabashi, K. Machida, N. Shimidzu (Japan Broadcasting Corporation, *Japan*)
- TuP-03-24 Influence of Resistance-Area Product on Time Response of Spin-Photon Memory
J. C. Le Breton, V. Zayets, H. Saito, S. Yuasa, K. Ando (AIST, *Japan*)
- TuP-03-25 Voltage Control of Magnetic Anisotropy in Au/Fe(001) Alloy/MgO Junctions
Y. Suzuki, T. Maruyama, Y. Shiota, T. Nozaki, M. Shiraishi, T. Shinjo (Osaka University, *Japan*)
- TuP-03-26 Perpendicular MTJ for the Application of STT-RAM using Ultrathin TbFeCo Films
C.-M. Lee, J.-M. Lee, L.-X. Ye, M.-H. Chen, T.-H. Hsieh, T.-H. Wu (National Yunlin University of Science and Technology, *Taiwan*)
- [Heat Assisted Recording]
- TuP-03-27 Optical TAMR Head Design for Placing Heating Spot Close to Magnetic Pole
K. Osawa, K. Sekine, M. Saka, N. Nishida, H. Hatano* (Konica Minolta Technology Center, *Japan*, *Konica Minolta Opto, Inc., *Japan*)
- TuP-03-28 Heat Conduction Analysis of Magnetic Recording Media for Thermally Assisted Magnetic Recording
Y. Moriyama, Y. Ashizawa, K. Nakagawa, A. Itoh (Nihon University, *Japan*)
- [High Performance Recording]
- TuP-03-29 Mechanical Performance Characteristics of 15000 rpm Ultrahigh-Speed

- Rotation of Ultra Thin Disk with Magneto-Optical Recording Film
A. Inaba, H. Awano (Hitachi Maxell, Ltd., *Japan*)
- TuP-03-30 High-Density Magnetic Recording Media on Self-Assembled Silica Particle Layer
JihHung Yeh, A. Tsukamoto, A. Itoh (Nihon University, *Japan*)
- TuP-03-31 Ultrafast Visualization of All-Optical Magnetization Reversal in GdFeCo-Films
K. Vahaplar, A. M. Kalashnikova, A. V. Kimel, A. Tsukamoto*, A. Itoh*, A. Kirilyuk, Th. Rasing (Radboud University Nijmegen, *The Netherlands*, *Nihon University, *Japan*)
- TuP-03-32 Estimation of Maximum Track Density in Shingled Writing Magnetic Recording
K. Miura, E. Yamamoto, H. Aoi, H. Muraoka (Tohoku University, *Japan*)
- [Measurement and Analysis]
- TuP-03-33 Thermal Drift Compensation Method for High Sensitivity Magnetic Force Microscopy
D. Yokota, T. Nagayama, H. Nomura, R. Nakatani (Osaka University, *Japan*)
- TuP-03-34 Magnetic Field Optical Sensor with Laser-Diode-Pumped Microchip Solid-State Laser
O. Kamada (Polytechnic University, *Japan*)
- TuP-03-35 $Y_{0.5}Bi_{2.5}Fe_5O_{12}$ Films for MO Indicator Prepared by Metal Organic Decomposition Method
T. Ishibashi, T. Kosaka, M. Naganuma, T. Nomura* (Nagaoka University of Technology, *Japan*, *Shizuoka Institute of Science and Technology, *Japan*)
- TuP-03-36 MFM Study of Ion-Irradiation Patterned CrPt₃ Ordered Alloy Films
D. Oshima, Y. Yamauchi, T. Kato, S. Tsunashima, S. Iwata (Nagoya University, *Japan*)
- TuP-03-37 Development of a Magneto-Optical Microscope with OPO System
T. Mano, H. Takagi*, J. Kim, P. B. Lim, A. V. Baryshev, M. Inoue (Toyohashi University of Technology, *Japan*, *Toyota National College of Technology, *Japan*)
- [Photonic Crystal & Device]
- TuP-03-38 The Surface of Magnetophotonic Crystal can Determine its Faraday Rotation
T. Goto, A. V. Baryshev, M. Inoue, A. V. Dorofeenko*, A. M. Merzlikin*, A. P. Vinogradov*, A. A. Lisyansky**, A. B. Granovsky*** (Toyohashi University of Technology, *Japan*, *Institute for Theoretical and Applied Electromagnetics, *Russia*, **Queens College of the City University of New York, *USA*, ***Moscow State University, *Russia*)
- TuP-03-39 Autocloned Magnetophotonic Crystals: Enhancement of Faraday Rotation
S. M. Baek, A. V. Baryshev, J. Kim, H. Uchida, M. Inoue (Toyohashi University of Technology, *Japan*)
- TuP-03-40 Thermomagnetic Driving for Magneto-Optic Spatial Light Modulator using Joule Heating
J.-Y. Kim, J. Heo, A. Baryshev, M. Inoue (Toyohashi University of Technology, *Japan*)
- TuP-03-41 Preparation of GdFe Based Spin Injection Light Modulation Films
K. Kuga, K. Aoshima, N. Funabashi, K. Machida, N. Shimidzu (Japan Broadcasting Corporation, *Japan*)
- TuP-03-42 Magnetoelastic Measurements of Garnet Pixels Array
K. Iwasaki, H. Kawai, H. Umezawa, M. Inoue* (FDK Corporation, *Japan*, Toyohashi University of Technology, *Japan*)
- TuP-03-43 Controlled Magnetization Direction of LPE Garnet Film by Stress Generated from PZT Film
T. Okubo, K. Iwasaki, T. Fujisawa, H. Kawai, H. Umezawa, M. Inoue* (FDK Corporation, *Japan*, *Toyohashi University of Technology, *Japan*)
- [Post Deadline Paper]

TuP-03-44 Exchange Coupled Double Layer Medium for Thermally Assisted Magnetic Recording
F. Akagi (Hitachi Ltd., *Japan*)

Jun. 17 (Wed.)

9:00 ~ 10:15 **We-01 High Density recording Materials**
Presider Dr. Edward C. Gage

9:00

We-01-01 Hybrid Magnetic Recording Media on FePt Grains and Self-Assembled Nano-Structured Layers
A. Itoh, A. Tsukamoto (Nihon University, *Japan*)

9:25

We-01-02 Fabrication Methods of Perpendicularly Oriented FePt Ordered Alloy Thin Films from Pt/Fe Bilayered Films for Hybrid Magnetic Recording Media
S. Nakagawa (Tokyo Institute of Technology, *Japan*)

9:50

We-01-03 The Domain Structure with Few Pinning Sites in TbFeCo/FePt Composite Films
K. Yoshino, F. Chino, A. Tsukamoto, A. Itoh (Nihon University, *Japan*)

10:15 ~ 10:30

Coffee Break

10:30 ~ 11:45

We-02 HAMR

Presider Dr. Bo Liu

10:30

We-02-01 An Integrated Heat Assisted Magnetic Recording System
E. C. Gage, W. A. Challener, C. Peng, A. V. Itagi, D. Karns, Y. Peng, X. Yang, X. Zhu, N. J. Gokemeijer, Y.-T. Hsia, G. Ju, R. E. Rottmayer, M. A. Seigler, T. Rausch (Seagate Technology, *USA*)

10:55

We-02-02 Integrated Optical System for Thermally Assisted Magnetic Recording - Toward Terabit-Class HDD
T. Matsumoto, J. Shimizu, I. Naniwa, Y. Iwanabe, S. Arai, T. Takahashi, S. Sasaki, S. Nakamura, F. Akagi, H. Miyamoto (Hitachi, Ltd., *Japan*)

11:20

We-02-03 Hybrid Head for Near Field Assisted Magnetic Recording
S. Miyanishi, K. Innami, T. Naka, T. Kitazawa, M. Yagura, N. Teraguchi, Y. Murakami, A. Takahashi (Sharp Corporation, *Japan*)

11:45 ~ 14:00

Lunch

14:00 ~ 15:40

We-03 Assisted Recording

Presider Prof. James Bain

14:00

We-03-01 Surface Plasmon Assisted HAMR Media and Head Based on Grating Structure
Y.-J. Kim, D.-S. Lim, M.-H. Shin, H.-S. Oh (Yonsei University, *Korea*)

14:25

We-03-02 Temperature Concerns about the Ultrathin Lubricant Film on Heat Assisted Magnetic Recording Media
J. Zhang, Q.D. Zhang, H.Q. Xie, B.X. Xu, J.W. Xu*, R. Ji, F.Y. Liew, S. Raheem**, M. Khalid** (Data Storage Institute, *Singapore*, *Institute of Materials Research & Engineering, *Singapore*, **National University of Singapore, *Singapore*)

14:50

We-03-03 Microwave Assisted Magnetic Recording with Circular AC Field
J. G. Zhu, Y. Wang (Carnegie Mellon University, *USA*)

15:15

- We-03-04 Elliptically Polarized AC Field for Microwave Assisted Magnetic Recording
M. Igarashi, Y. Suzuki, H. Miyamoto, Y. Maruyama*, Y. Shiroishi* (Hitachi, Ltd., *Japan*, *Hitachi Global Storage Technologies, *Japan*)
- 15:40 ~ 16:00 Coffee Break
- 16:00 ~ 17:15 **We-04 Photonic Crystal & Device**
Presider Prof. Takayuki Ishibashi
- 16:00
- We-04-01 Magneto-optic spatial light modulators with magnetophotonic crystals driven by PZT films
H. Takagi*, K. H. Chung, S. Mito, T. Kato, T. Mano, H. Umezawa**, M. Inoue (Toyohashi University of Technology, *Japan*, *Toyota College of Technology, *Japan*, **FDK Corporation, *Japan*)
- 16:25
- We-04-02 Waveguide Optical Isolators Using Magneto-Optic Garnet
T. Mizumoto (Tokyo Institute of Technology, *Japan*)
- 16:50
- We-04-03 Time Modulation of Light Propagation Through Magneto-Photonic Crystals and Devices Based on Spin Dynamics
R. Antos, M. Veis, S. Visnovsky (Charles University in Prague. *Czech Republic*)
- 17:45 ~ 20:30 Banquet

Jun. 18 (Thu.)

- 9:00 ~ 10:15 **Th-01 Thermo-Magnetic Simulation**
Presider Prof. Jian-Gang Zhu
- 9:00
- Th-01-01 Theory of Ultrafast Magnetization Reversal at Elevated Temperatures Using an Atomistic Model
J. Barker, R. Evans, R.W. Chantrell, D. Hinzke*, U. Nowak*, U. Atxitia**, O. Chubykalo-Fesenko** (The University of York, *UK*, *Universitaet Konstanz, *Germany*, **CSIC, *Spain*)
- 9:25
- Th-01-02 High Efficiency Near Field Sources for Heat Assisted Magnetic Recording
J.A. Bain, D.D. Stancil (Carnegie Mellon University, *USA*)
- 9:50
- Th-01-03 Transition Formation in Thermally-Assisted Magnetic Recording
S.J. Greaves, H. Muraoka (Tohoku University, *Japan*)
- 10:15 ~ 10:30 Coffee Break
- 10:30 ~ 12:10 **Th-02 Spintronics & New Materials**
Presider Prof. Yoshishige Suzuki
- 10:30
- Th-02-01 The Fe/MgO Interface: From Spin-Polarized Tunneling to Voltage Assisted Writing
D. Wortmann (Forschungszentrum Jülich, *Germany*)
- 10:55
- Th-02-02 A Study of Photo-Induced Effects in Ferromagnetic Semiconductors, and Beyond
H. Munekata (Tokyo Institute of Technology, *Japan*)
- 11:20
- Th-02-03 Spin Polarization Switching at 2.2 Tbit/sec for Proposed Spin-Photon Memory
V. Zayets, J. C. Le Breton, H. Saito, S. Yuasa, K. Ando (AIST, *Japan*)
- 11:45
- Th-02-04 Racetrack Memory -A Magnetic Domain Wall Based Storage Class Memory

Stuart S.P. Parkin (IBM Almaden Research Center, *USA*)

12:10 ~ 14:00 Lunch

14:00 ~ 15:40 **Th-03 Patterned Media**
Presider Dr. Bruce Terris

14:00
Th-03-01 Thermal Stability of Single Nanoplatelets : Beyond The Coherent Reversal Model
J.-P. Adam*, S. Rohart, J.-P. Jamet, A. Mougin, J. Ferré, H. Bernas, G. Faini**, J. Fassbender*** (Université Paris-Sud, *France*, *Université Versailles St-Quentin, *France*, **Laboratoire de Photonique et Nanostructures, *France*, ***Forschungszentrum Dresden- Rossendorf, *Germany*)

14:25
Th-03-02 Discrete Track and Bit Patterned Magnetic Recording Media
T.R. Albrecht (Hitachi Global Storage Technologies, *USA*)

14:50
Th-03-03 Amorphous Magnetic Film Patterned Media with Columnar Structure
N. Iwata, Y. Murakami, A. Takahashi, H. Nomura*, R. Nakatani* (Sharp Corporation, *Japan*, *Osaka University, *Japan*)

15:15
Closing Remarks
Dr. Hiroyuki Awano