

TECHNICAL PROGRAM MORIS2009

Jun. 16 (Tue.)

8: 50~9:00 **Opening Remarks**
Prof. Katsuji Nakagawa

Tu-01 **Fast Reversal Phenomena**

Presider: Dr. Takeshi Kato

9:00 Tu-0i-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)

10:15~0:30 Coffee Break

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)

11:45~12:10 Photograph

12:10~14:00 Lunch

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
 Y. Shiratsuchi, T. Nakatani, S. Kawahara, R. Nakatani (Osaka University, Japan)
- 15:40 Tu-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) 26

TuP-03 Poster Session

Presider: Dr. Ariyoshi Nakaoki

[Magnetics & Magnetic Materials]

TuP-03-01

Magnetic Properties of L1₂-Type CrPt₃(III) 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

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-03-04

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

TuP-03-05

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-03-06

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

TuP-03-07

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-03-08

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-03-09

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-03-10

Magnetic Structures of Exchange Coupled Co/Ru Multilayers Investigated by Resonant X-Ray Magnetic Scattering

R. Yaraagishi, K. Kodama, T. Koike, N. Hosoi (Nara Institute of Science and Technology, 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)

[Functional Material & Devices]

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)

[Spintronics & New Materials]

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, *Daido Institute of Technology, 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. Shiratsuchi, 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, T. Ishibashi* (Japan Broadcasting Corporation, Japan, *Nagaoka University of Technology, 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

J. 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

Enhanced Faraday Rotation due to Optical Tamm State in Various ID Magnetophotonic Crystals

T. Goto, A. V. Baryshev, M. Inoue, A. V. Dorofeenko*, A. M. Merzlikin*, A. P. Vinogradov*,

A. A. Lisiansky**, 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.)

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 Perpendicular 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

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. \, Itagi, D. Karns, Y. Peng, X. Yang, X. Zhu, N.J. Gokemeijer, Y.-T. Hsia, G. Ju, R. E. Rottraayer, 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

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. Lira, M.-H. Shin, H.-S. Oh (Yonsei University, Korea)

14:25 We-03-02

Temperature Concerns in Ultrathin Lubricant Film for Heat Assisted Magnetic Recording Media

J. Zhang, Q. D. Zhang, H. Q. Xie, B. X. Xu, J. W. Xu* R. Ji, 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)

15:14~16:10 Coffee Break

We-04 Photonic Crystal & Device

Presider: Dr. 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 National 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)

18:45~20:30 Banquet

Jun. 18 (Thy.)

Th-01 Thermo-Magnetic Simulation

Presider: Prof, Jian-Gang Zhu

9:00 Th-01-01

Theory of Ultrafast Magnetisation Reversal at Elevated Temperatures Using Atomistic Model

J. Barker, R. Evans, R. W. Chantrell, D. Hinzke* U. Nowak* U. Atxitia**, O. C. 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

Th-02 Spintorionics & New Materials

Presider: Prof. YosMsWge Suzuki

10:30 Th-02-01

The Fe/MgO Interface: From Spin-Polarized Tunneling to Voltage Assisted Writing

D. Wortmann (Forschungszentrum Julich, 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

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

12:10-14: 00 Lunch

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. Robart, J.-P. Jamet, A. Mougin, J. Ferre, H. Bernas, G. Faini**, J. Fassbender***
(Universite Paris-Sud, France, *Universite 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)

Closing Remarks

Dr. Hiroyuki Awano