

# **Technical Program**

## **MORIS 2002**

**Sunday May 5, 2002**

### **TUTORIALS**

Su - Tu 1 TRENDS IN HARD DISC DRIVE TECHNOLOGY

M. H. Kryder

Su - Tu 2 PROBLEMS AND SOLUTIONS IN SPIN ELECTRONICS

J. Gregg

### **OPENING SESSION**

### **KEY - KEYNOTES**

Su - Key 3 PROSPECTS FOR NEW STORAGE TECHNOLOGIES IN THE AGE OF COMMUNICATION  
-BROADCASTING FUSION

H. Oshima

Su - Key 4 NEW TRENDS AND TECHNICAL CHALLENGERS IN OPTICAL STORAGE

B. Bechevet

**Monday May 6, 2002**

### **NEW MEDIA AND MO EFFECTS**

Mo - A 1 SELF ASSEMBLING IRON-PLATINUM NANOPARTICLES

S. Sun, S. Anders, H. F. Hamann, J. U. Thiele, J. E. Baglin, T. Thomson, E. E. Fullerton,  
C. B. Murray, B.D. Terris

Mo - A 2 DILUTED MAGNETIC SEMICONDUCTORS FOR MAGNETO-OPTICAL APPLICATIONS

W. Zaets, R. Akimoto, H. Saito, K. Ando

Mo - A 3 MAGNETO-OPTICAL STUDY OF FERROMAGNETIC NANOSTRUCTURED MATERIALS  
AND THIN FILMS

R. V. Pisarev

Mo - A 4 AB INITIO CALCULATIONS OF MAGNETO-OPTICAL EFFECTS

J. Kunes, P. M. Oppeneer

### **ULTRA-HIGH RESOLUTION MAGNETIC MICROSCOPY**

Mo - B 1 STEREO-MICROSCOPE FOR ATOMIC ARRANGEMENT USING CIRCULAR DICHROISM  
IN X-RAY PHOTOELECTRON DIFFRACTION

H. Daimon, S. OKAMOTO, A. NAKAMOTO, S. HAYASHI, K. FUKUMOTO, T. NAKATANI,  
T. MATSUSHITA, K. HATTORI

Mo - B 2 IMAGING MAGNETIC DOMAINS WITH SUB-NANOMETER RESOLUTION USING  
SPIN-POLARIZED SCANNING TUNNELING MICROSCOPY

M. Bode

Mo - B 3 HIGH RESOLUTION MAGNETIC IMAGING WITH SPIN-POLARIZED SCANNING  
TUNNELING MICROSCOPY

W. Wulfheckel, H. F. Ding, U. Schlickum, J. Kirschner

### **POSTER SESSION I**

#### **MATERIALS, FILM DEPOSITION AND THIN MAGNETISM**

Mo - PA 1 MAGNETO-OPTICAL AND MAGNETIC PROPERTIES OF (Co<sub>50</sub>Ni<sub>50</sub>)<sub>3</sub>Pt AND Ni<sub>3</sub>Pt  
PARTIALLY ORDERED ALLOY THIN FILMS

G. Lauhoff, T. Suzuki, A. Toporov, N. Ariful

Mo - PA 2 DEPENDENCE OF MAGNETIC ANISOTROPY ON VALENCE ELECTRON NUMBERS OF  
(Fe-Co-Ni-Cr)<sub>50</sub>Pt<sub>50</sub> ALLOY THIN FILMS

H. Kanagawa, T. Suzuki

Mo - PA 3 MAGNETIC CHARACTERISTICS OF TbFeCo/FePt DOUBLE LAYER FOR MO  
RECORDING

Y. Itoh, M. Takeuchi, A. Tsukamoto, K. Nakagawa, A. Itoh

Mo - PA 4 SPINEL OXIDES THIN FILMS FOR WRITE-ONCE OPTICAL RECORDING WITH BLUE  
LASER SOURCES

P. Taihades, L. Presmanes, I. Pasquet, C. Bonningue, F. Laporte

Mo - PA 5 TECHNOLOGICAL PROBLEM AND OPTICAL PROPERTIES OF HIGH QUALITY RUTILE  
SINGLE CRYSTALS FOR ISOLATOR APPLICATION

A. Balbashov, J. V. Pisarevsky

Mo - PA 6 TEMPERATURE DEPENDENCE OF THE PROPERTIES OF RE-TM THIN FILMS

Z. Y. Lee, X. F. Yang, G. Q. Lin, Z. Y. Li, X. M. Cheng, F. Jin

Mo - PA 7 STM OBSERVATION AND PERPENDICULAR MAGNETIC ANISOTROPY OF CO ULTRATHIN FILMS ON AU LAYER

K. Okamoto, T. Kato, S. Iwata, S. Tsunashima

Mo - PA 8 MAGNETO-OPTICAL PROPERTIES OF Co-Ag(Au)/TbFeCo BILAYERS FOR SHORT WAVELENGTH RECORDING

V. G. Kravet

Mo - PA 9 MAGNETIC AND MOSSBAUER STUDIES OF PERPENDICULAR MAGNETIC ANISOTROPY IN NANOCRYSTALLINE GdFeAg FILMS

N. H. Duc, F. Richnomme, A. Fnidiki, T. M. Danh, N. T. Huy, J. Teillet

Mo - PA 10 AS-DEPOSITED CHARACTERISTICS AND THERMAL STABILITY OF CoFe AND Ru BASED MULTILAYERS

K. Bal, H. A. van der Berg, A. Keen, T. Rasing

Mo - PA 11 STUDY of MICROMAGNETIC STRUCTURES with MAGNETIC SOFT x-RAY MICROSCOPY

P. Fischer, D. Denbeaux, T. Eimueller, D. Goll, G. Schuetz

Mo - PA 12 INTERLAYER EXCHANGE COUPLING IN Fe/FeSi/Si/FeSi/Fe STRUCTURES WITH COMBINED METALLIC- AND INSULATING – TYPE SPACERS

R.R. Gareev, D. E. Burgler, M. Buchmeier, R. Schreiber, P. Grunberg

Mo - PA 13 PREPARATION AND CHARACTERIZATION OF FERRITE THIN FILMS

M. Desai, S. Prasad, N. Venkatarmani, I. Samajdar, A. K. Nigam, R. Krishnan, E. M. Baggio-Saitovitch, B. R. Pujada, A. Rossi

Mo - PA 14 DEPOSITION OF MULTILAYERS USING FAST SWITCHING TRIPLE RING MAGNETRON CATHODE

B. Cord, O. Keitel, H. Rohrmann, K. H. Schuller

Mo - PA 15 DIFFERENTIAL TRANSVERSE KERR MAGNETOMETRY AND LONGITUDINAL KERR OBSERVATION OF DOMAINS

Y. Souche, O. Geoffroy

Mo - PA 16 SUPERIOR FILM COMPOSITION UNIFORMITY AND ADJUSTABLE COMPOSITION FOR THE NEXT GENERATION MO TECHNOLOGY

O. Rattunde, M. Dubs, H. Rohrmann, V. Schlegel, T. Eisenhammer

## **MO EFFECTS, MO DEVICES AND APPLICATIONS**

Mo - PB 1 MODELLING OF TWO-DIMENSIONAL MAGNETOOPTICAL GRATINGS

J. Vlcek, J. Pistora, D. Ciprian

Mo - PB 2 A MERIT OF DIELECTRIC LAYER SIN REPLACED BY SEMICONDUCTOR LAYER GAP IN

CONVENTIONAL DOUBLE LAYERD MO DISK

Y. Zheng, X. Ju, L. Chen

Mo - PB 3 MAGNETOOPTICAL PROFERTIES OF BURIED FERROMAGNETIC/NON-FERROMAGNETIC IMERFACES: APPLICATION TO

J. Hamrle, J. Ferre, M. Nyvlt, P. Beauvillain, S. Visnovsky

Mo - PB 4 MAGNETOOFTICAL DEPTH RESOLUTION OF POLAR KERR EFFECT IN FERROMAGNETIC MULTILAYERS

J. Hamrle, J. Ferre, S. Visnovsky, M. Nyvlt

Mo - PB 5 MAGNETIC CIRCULAR DICHROISM OF (MN1-XCRX)PT3 ORDERED ALLOY FILMS

H. Ito, K. Sugihara, T. Kato, K. Okamoto, S. Tsunashima

Mo - PB 6 QUADRATIC MAGNETO-OPTIC EFFECTS IN REFLECTION FROM UNIAXIAL CRYSTALS

K. Postava, J. Pistora, S. Visnovsky, T. Yamaguchi

Mo - PB 7 MAGNETIC AND MAGNEWOPTICAL PROPERTIES OF MnSbBi THIN FILMS WITH AN Sb-SEED LAYER

K. Kang, A. K. Petford-Long, T. Suzuki

Mo - PB 8 PARTICLES SIZE DEPENDENCE OF FARADAY ROTATION IN MAGHEMITE FERROFLUIDS

F. Royer, D. Jamon, J. J. Rousseau, V. Cabuil, D. Zins, H. Roux

Mo - PB 9 DEPENDENCE ON FE THICKNESS OF MAGNETO-OPTICAL KERR EFFECT FOR [GAMMA-FE/CU] EPITAXIAL MULTILAYERS

D. Higashida, Y. Ando, L. Lin, M. Doi, H. Asano, M. Matsui

Mo - PB 10 NONLINEAR DIFFRACTION BY A TWO-DIMENSIONAL MAGNETIC PHOTONIC CRYSTAL (MAGNETIC BUBBLE LATTICE)

I. L. Lyubchanskii, N. N. Dadoenkova, M. I. Lyubchanskii, E. A. Shapovalov, A. E. Zabolotin, T. Rasing

Mo - PB 11 VOLTERRA ANALYSIS OF THE NON-LINEAR MAGNETO-OPTIC CHANNEL

C. Tannous, J. Gieraltowski

Mo - PB 12 MAGNETOOPTICAL AND REFLECTIVITY STUDIES IN SrTiO3

K. Sato, T. Ishibashi

Mo - PB 13 MAGNETO-OPTICAL SPECTRA OF SINGLE CRYSTALLINE CoCrPt FILMS BETWEEN 1.2 AND 6eV

K. Sato, M. Hosoba, S. Shimizu, K. Terayarna, M. Futamoto

Mo - PB 14 MAGNETO-OPTICAL STUDIES OF a-Fe2O3/NiO MULTILAYERS

J. Mistrik, R. Lopusnik, S. Visnovsky, N. Keller, M. Guyot, R. Krishnan

Mo - PB 15 "ID PHOTO" FOR MOBILE STORAGE

Y. Suzuki, S. Tanaka, S. Ichiura, H. Takao, S. Ohnuki

### **HIGH DENSITY MO RECORDING: MSR, MAMMOS, ... (PART I)**

Mo - D 1 HIGH DENSITY RECORDING ON DOUBLE-MASK MSR MEDIA USING MAGNETIC FIELD MODULATION

T. Tanaka, Y. Fujita, T. Kamimura, S. Hamaguchi, K. Tamanoi, K. Shono

Mo - D 2 STUDY OF DOMAIN WALL DISPLACEMENT DETECTION WITH LAND-GROOVE RECORDING

T. Sakamoto, Y. Tanaka

Mo - D 3 OPTIMIZATION OF M.O READ-OUT PERFORMANCE OF MSR/MAMMOS DISKS

R. Atkinson, W. R. Hendren, W. Clegg, C. D. Wright

Mo - D 4 TWO-INCH-DIAMETER MAGNETO-OPTICAL DISK SYSTEM WITH 3 GB CAPACITY AND 24 MBPS DATA TRANSFER RATE USING RED LASER

M. Birukawa, Y. Hino, K. Nishikiori, K. Uchida, T. Shiratori, T. Hiroki, Y. Miyaoka, Y. Hozumi

Mo - D 5 SPATIAL LIGHT DISTRIBUTION IN MAGNETO OPTICAL MULTILAYERED SYSTEMS FOR HIGH NUMERICAL AND SOLID IMMERSION LENS FOCUSING: INFLUENCE ON THERMAL AND MO EFFECTS

A. Lagrange, L. Poupinet, C. Armand, B. Bechevet

### **DOMAIN PHYSICS: DYNAMICS AND STABILITY**

Mo - E 1 FEMTOSECOND LASER PULSE INDUCED MAGNETIZATION REVERSAL: TOWARDS THERMO-MAGNETIC WRITING AT THZ RATES

J. Hohlfeld, T. Gerrits, H. Awano, N. Ota, T. Rasing

Mo - E 2 PRECESSION CONTROL AND SWITCHING IN THIN MAGNETIC FILMS

M. Bauer, R. Lopusnik, J. Fassbender, B. Hillebrands

Mo - E 3 DYNAMIC OBSERVATION OF WALL SPEED IN MAMMOS READING LAYER

A. Itoh, M. Akiyama, T. Ishikawa, K. Nakagawa

Mo - E 4 INFLUENCE OF HEAT TREATMENT ON THERMOMAGNETICALLY RECORDED DOMAINS IN TbFeCo DISKS

N. Takagi, A. Yamaguchi, M. Kume, P. Fischer, M. Kumazawa, S. Tsunashima

**Tuesday May 7, 2002**

### **COMBINED OPTICAL AND MAGNETIC TECHNOLOGIES**

Tu - F 1 ISSUES IN MEDIA DESIGN FOR HYBRID RECORDING

T. W. McDaniel, W. A. Challener

Tu - F 2 HIGH ANISOTROPY MATERIALS FOR MEDIA APPLICATIONS IN THERMALLY ASSISTED MAGNETIC RECORDING

J. U. Thiele, K. R. Coffey, M. F. Toney, J. A. Hedstrom

Tu - F 3 HEAT ASSISTED MAGNETIC RECORDING

T. Rausch, A. Itagi, P. Herget, J. A. Bain, D. D. Stancil, T. E. Schlesinger

### **NEAR FIELD AND SCANNING PROBE MO RECORDING**

Tu - G 1 NEAR FIELD MO RECORDING SYSTEM

S. Kim, J. Park, H. Jeong, J. Kim, J. Kim, N. Kim

Tu - G 2 AN OPTICAL FLYING HEAD FOR HIGH-DENSITY MO RECORDING

K. Tezuka, T. Uchiyama, N. Ota, A. Itoh

### **FUTURE AND ALTERNATIVE TECHNOLOGIES**

Tu - H 1 DIFFRACTION CONTROL AND ENHANCED TRANSMISSION THROUGH SUB-WAVELENGTH APERTURES

T. W. Ebbesen

Tu - H 2 THE CHALLENGES IN DUAL-LAYER PHASE-CHANGE DISCS

R. Vlutters

Tu - H 3 MULTILAYER TRANSMISSIVE DISC

J. Leheureau, J. Colineau

### **POSTER SESSION II**

#### **DOMAIN AND DYNAMICS, PATTERNED MEDIA, MSR, MAMMOS**

Tu - PC 1 MAGNETIC DOMAIN SHRINKAGE MECHANISMS IN TBFECO MAGNETO-OPTICAL RECORDING MEDIA

M. Mochida, T. Suzuki

Tu - PC 2 SIMULATIONS FOR RECORDING PROCESSES OF CRESCENT-SHAPE DOMAIN IN MO MEDIA

A. Tsukamoto, K. Sekine, K. Iimura, K. Nakagawa, A. Itoh

Tu - PC 3 MAGNETIC NANOSTRUCTURES PATTERNED BY FOCUSED ION BEAM

J. Ferre, R. Hyndman, A. Mougin, J. P. Jamet, J. Gierak, D. Mailly, C. Chappert, V. Mathet,  
P. Warin, J. Chapman

Tu - PC 4 DYNAMICAL PROPERTIES OF MAGNETIZATION REVERSAL OF (Ga,Mn)As LAYERS  
STUDIED BY MOKE MEASUREMENTS

D. Hrabovsky, E. Vanelle, A. Fert, J. P. Redoules, J. Sadowski, J. Kanski, L. Ilver

Tu - PC 5 MAGNETO-OPTIC OBSERVATION ON MICRONIC SIZED PERIODIC STRUCTURE

D. Hrabovsky, J. Jaworowicz, D. Ciprian, A. Fert, J. Pistora

Tu - PC 6 VISUALIZATION OF MAGNETIC STRUCTURES IN SUPERCONDUCTORS AND  
MAGNETIC MATERIALS USING MAGNETOOPTICAL FILMS

M. V. Indenborn, L. S. Uspenskaya, C. J. van der Beek, A. Konczykowski

Tu - PC 7 TOWARD TINY DOMAINS LESS THAN 1/10 OF A LASER BEAM SPOT, -ZERO FIELD  
MAMMOS-

M. Tani, K. Inoue, M. Sekine, S. Imai, H. Awano, K. Shimazaki, N. Ota

Tu - PC 8 ANALYSIS OF MAMMOS READOUT FROM CRESCENT DOMAINS USING A BLUE LASER

S. Imai, Y. Nakatani, H. Awano, O. Ishizaki, N. Ota

Tu - PC 9 MODELLING THE MAMMOS RECORD AND READOUT PROCESSES

M. K. Loze, C. D. Wright, R. Atkinson, W. Clegg

Tu - PC 10 THE RECORDING OF TINY MARKS LESS THAN 100 NM ON MAGNETO-OPTICAL  
MEDIUM SPUTTERED FROM RE-TM ALLOY TARGET

M. Murakami, T. Sakaguchi, Y. Kawaguchi, M. Birukawa, T. Hiroki, Y. Hozumi, T. Shiratori,  
E. Fujii

Tu - PC 11 ASYMMETRIC RUN LENGTH CONSTRAINTS FOR INCREASED RESOLUTION IN  
MAMMOS READOUT

C. A. Verschuren, H. W. Van Kesteren

Tu - PC 12 A NEW TYPE CAD-MSR DISK USING EXCHANGE COUPLING FORCE

Y. Tanaka, Y. Muto

Tu - PC 13 MAGNETO-OPTIC AND SCANNING PROBE MICROSCOPY STUDIES OF PATTERNED  
MAGNETIC FILMS

N. I. Polushkin, K. V. Rao

Tu - PC 14 SPIN POLARIZED INJECTION FROM MANGANITE INTO CONJUGATED OLIGOMER AT  
ROOM TEMPERATURE

V. A. Dediu, I. Bergenti, M. Murgia, C. Taliani, S. Barbanera

Tu - PC 15 CASE OF NON-LINEARITY IN THE READOUT PROCESS IN OPTICAL DISK

T. Maeda, T. Shimano

**NEAR FIELD AND SCANNING PROBE RECORDING, ALTERNATIVE TECHNOLOGIES**

Tu - PD 1 DEVELOPING THE POTENTIAL OF PLASMON ENHANCEMENT IN PERPENDICULAR (PtCo MULTILAYER) MAGNETO-OPTIC RECORDING MEDIA

D. M. Newman, R. J. Matelon, M. L. Wears

Tu - PD 2 SPECTROSCOPIC STUDIES OF THIN FILM ELECTRON TRAPPING OPTICAL MEMORY MEDIA (Cas:Eu-Sm)

D. M. Newman, J. Wu, I. Viney

Tu - PD 3 FABRICATION OF NANODOTS BY ION BEAM INDUCED CHEMICAL VAPOR DEPOSITION AND THEIR MAGNETIC PROPERTIES

A. Lapicki, K. Kang, T. Suzuki

Tu - PD 4 3D - PROBING OF COHERENT MAGNETISATION REVERSAL IN THIN FILM PERMALLOY ELEMENTS

T. Gerrits, H. A. van der Berg, J. Hohlfeld, T. Rasing, L. Bar

Tu - PD 5 IMPROVEMENT OF THERMAL STABILITY IN MAGNETIC TUNNEL JUNCTIONS

J. Ha, K. Lee, K. Rhie, K. Shin

Tu - PD 6 TUNNEL-TYPE GMR AND MICROSTRUCTURAL CHANGE IN ANNEALED INSULATING GRANULAR FILMS

J. Ha, S. Mitani, K. Yakushiji, K. Takanashi

Tu - PD 7 RANDOM SEED SCRAMBLING METHOD FOR PHASE CHANGE OPTICAL DISKS

Y. Katayama, S. Taira, T. Katou, T. Nishiya, H. Miyamoto, T. Maeda, O. Kawamae, T. Hoshizawa, M. Takahashi

Tu - PD 8 DESIGN OF THE OPTICAL FLYING HEAD FOR NEAR-FIELD RECORDING

S. Kim, Y. Kim, J. Park, J. Kim, J. Lee, K. Chung, D. Kim

Tu - PD 9 SIMULTANEOUS KERR MICROSCOPY AND MAGNETOTRANSPORT INVESTIGATIONS OF MAGNETIC TUNNEL JUNCTIONS

B. Diouf, D. Hrabovsky, L. Gabillet, A. Fert, J. Bobo

Tu - PD 10 OPTIMIZATION OF EXCHANGE BIAS IN NIO-CO-AL<sub>2</sub>O<sub>3</sub>-CO MAGNETIC TUNNEL JUNCTIONS

B. Diouf, L. Gabillet, A. Fert, J. Bobo

Tu - PD 11 SPIN VALVES DEPOSITED ON SELF-ORGANIZED FACETED NIO GROWN ON MGO(100)

A. Encinas-Oropesa, S. Dubourg, J. Bobo

Tu - PD 12 SIGNAL NON-LINEARITIES AND THEIR EFFECT UPON THE DATA RECOVERY PROCESS IN HIGH-DENSITY OPTICAL STORAGE

P. W. Nutter, C. D. Wright, I. Gonzales-Arcelus, S. D. Jepsen

Tu - PD 13 DETECTING LOCALIZED MAGNETIC FIELDS WITH A HYBRID SYSTEM

L. E. Helseth, V. V. Smirnov, E. I. Il'yashenko



Tu - PD 14 NEAR FIELD OPTICS-SOLID IMMERSION LENS WITH MAGNETIC FIELD MODULATION FOR MAGNETO-OPTICAL RECORDING

R. Sbiaa, T. Suzuki

Tu - PD 15 NEAR-FIELD MAGNETO-OPTICAL MEDIA

J. Kim, K. M. Hong, M. R. Kim, S. Kim, J. Lee, K. Chung, D. Kim

## **Wednesday May 8, 2002**

### **PANEL: NEW CONCEPTS IN MAGNETO - OPTICAL RECORDING**

We - L 1 T. Suzuki, Toyota Technological Institute

We - L 2 T. W. Ebbesen, Louis Pasteur University

We - L 3 K. Ueyanagi, Fuji Xerox

We - L 4 T. Rausch, Carnegie Mellon University

We - L 5 T. W. McDaniel, Seagate Corporation

We - L 6 H. W. Van Kesteren, Philips Research

We - L 7 H. Awano, Hitachi Maxell Ltd

We - L 8 D. Weller, Seagate Cooperation

### **HIGH DENSITY MO RECORDING: MAMMOS, ... (PART II)**

We - M 1 READ/WRITE CHARACTERISTICS OF ZERO FIELD MAMMOS

K. Mitani, H. Watanabe, N. Takagi, H. Noguchi, N. Marniya, H. Terasaki, H. Awano, M. Sekine, M. Tani, O. Ishizaki, K. Shirnazaki

We - M 2 SIGNAL PROCESSING FOR THE MAMMOS CHANNEL

A. H. Immink, M. W. Blum, C. A. Verschuren, H. W. Van Kesteren

### **MO DEVICES AND MASTERING TECHNOLOGIES**

We - N 1 RECENT DEVELOPMENT OF MAGNETO-OPTICAL DEVICES

N. Nakamura

We - N 2 OPTICAL ISOLATION BY MAGNETO-OPTIC MACH-ZEHNDER WAVEGUIDE INTERFEROMETERS

M. Levy, J. Fujita, R. M. Osgood, Jr., H. Dotsch, C. Gutierrez

We - N 3 PERFORMANCE OF AN ELECTRON BEAM RECORDER FOR DISK MASTERING

M. Katsumura, Y. Hosoda, H. Nishiwaki, T. Iida, F. Yokogawa

**CLOSING SESSION**