

Technical Program

July 11, 1994 (Monday)

Welcome and Opening Remarks (10:15-10:20)

R. Ito (*Univ. of Tokyo, Japan*)
Organizing Committee, Chairperson

Keynote Presentation (10:20-11:00)

President: M. Ojima (*Hitachi, Japan*)

Mo-K1 (Invited)

(10:15) **Optical Disk Industry, Present and Future**
J.A.Th. Verhoeven (*ODME, The Netherlands*) 3

High Density Recording (I) (11:00-12:00)

President: S. Kubota (*Sony, Japan*)

Mo A1 (Invited)

(11:00) **3-D Holographic Disk**
Demetri Psaltis (*CAIST, U.S.A.*) 7

Mo A2 (Invited)

(11:30) **Room Temperature Persistent Hole Burning of Sm²⁺ in Aluminoborate Glasses**
K. Hirao, K. Fujita, D. H. Cho and N. Soga (*Kyoto Univ., Japan*) 9

Lunch (12:00-13:30)

High Density Recording (II) (13:30-15:40)

President: M. Irie (*Kyusyu Univ., Japan*)

Mo B1 (Invited)

(13:30) **Photon Scanning Tunneling Microscopy and It's Application**
M. Ohtsu (*Tokyo Inst. of Technol., Japan*) 13

Mo B2 **Angle-Multiplexed Holographic Memory Using Ce-doped SBN Crystal**

(14:00) K. Nonaka, S. Yagi and M. Yamamoto (*NTT, Japan*) 15

Mo B3 **High Density Optical Disk Using Two Dimensional Recording**

(14:25) K. Wakabayashi, H. Sugiyama, T. Maeda, A. Saitou, H. Miyamoto and
H. Awano (*Hitachi, Japan*) 17

Mo B4 **Three-Dimensional Multi-Layered Optical Memory with Laser Scanning**

(14:50) **Microscope Technology**
T. Tanaka, Y. Kawata and S. Kawata (*Osaka Univ., Japan*) 19

Mo B5 **Nanometer Recording Using a Scanning Near-field Optical Microscope with a
Laser Diode**

(15:15) S. Hosaka, T. Shintani, Y. Maruyama, K. Nakamura, A. Kikukawa and
R. Imura (*Hitachi, Japan*) 21

Coffee Break (15:40-16:00)

High Density Recording (III) (16:00-17:40)

Presider: T. Maeda (*Hitachi, Japan*)

- Mo C1 (16:00) A High Density Read-Only Optical Disk System Using Superresolution with an SHG Green Laser**
M. Ono, K. Yasuda, A. Fukumoto and M. Kaneko (*Sony, Japan*) 25
- Mo C2 (16:25) Magnetically Induced Super Resolution Using Magneto-Static Coupling**
T. Kawano, H. Ito, H. Yoshida and Y. Kobayashi (*Mitsubishi Kasei, Japan*)... 27
- Mo C3 (16:50) Recording Characteristics of a Magneto-Optical Super-Resolution Disk**
J. Hirokane, Y. Murakami, H. Katayama, A. Takahashi, K. Ohta and H. Yamaoka (*Sharp, Japan*)..... 29
- Mo C4 (17:15) MSR Land and Groove Recording Using 680nm LD**
M. Birukawa, Y. Fukamachi, N. Miyatake and H. Kawabata (*Matsushita Elec. Ind., Japan*)..... 31

Welcome Party (18:00-20:00)

July 12, 1994

High Density Recording (IV) (9:45-11:55)

Presider: H. Inada (*NEC, Japan*)

- Tu A1 (9:45) (Invited) High Track Density Recording by Land and Groove Method on Phase Change Optical Disks**
N. Miyagawa, Y. Gotoh, E. Ohno, K. Nishiuchi and N. Akahira (*Matsushita Elec., Japan*) 35
- Tu A2 (10:15) High Density Land Groove Recording on Phase Change Optical Disk**
K. Nishimura, T. Suzuki, K. Takeguchi and I. Morimoto (*Asahi Chemical Ind., Japan*)..... 37
- Tu A3 (10:40) Phase Change Optical Disks for Land and Groove Recording**
E. Ohno, K. Nishiuchi, Y. Sakaue, K. Ide, K. Nagata, N. Miyagawa and N. Akahira (*Matsushita Elec. Ind., Japan*) 39
- Tu A4 (11:05) Cross-Talk Analysis of Land/Groove Magneto-Optical Recording**
A. Fukumoto, S. Masuhara and K. Aratani (*Sony, Japan*) 41
- Tu A5 (11:30) High Density Magneto-Optical Recording with an SHG Green Laser Using Magnetic Field Modulation**
I. Ichimura, Y. Takeshita, K. Aratani, Y. Sabi, A. Fukumoto, M. Kaneko and H. Owa (*Sony, Japan*)..... 43

Lunch (11:55-13:30)

Drive Technologies (I) (13:30-14:00)

Presider: J. Saito (*Nikon, Japan*)

- Tu B1 (13:30) (Invited) Digital Video Disk System with Short Wavelength Recording**
D.H. Shin (*Samsung Adv. Inst. of Technol., Korea*) 47

Poster Preview (14:00–15:20)

Presentation (15:40–17:10)

Drive Technologies (II)

Presider: F. Yamada (*IBM, Japan*)

P1	Development of Variable Bit Rate Disc System K. Yokouchi, K. Sugiyama, K. Tanaka, M. Fujiwara, S. Nemoto and K. Iwata (<i>Victor, Japan</i>)	51
P2	2.2GB Capacity/130mm Multiplexed Address Sampled Servo Optical Disk K. Funamoto, H. Hirano, Y. Ogawa, S. Okada, K. Masui, K. Kinpara and H. Fueki (<i>Pioneer, Japan</i>)	53
P3	Magneto-optical Recording on Tape Media Using a Rotating Optical Head H. Tokumaru, K. Arai and S. Yoshimura (<i>NHK, Japan</i>)	55
P4	Recording System for Read Only Optical Disk with MCAV Format Y. Matsumoto, E. Shibashi, F. Ueno, K. Aoki and M. Moriya (<i>Matsushita Elec., Ind., Japan</i>)	57

Drive Technologies (III)

Presider: K. Ohta (*Sharp, Japan*)

P5	A PRML Read Channel with Self-Clocking Method on Magneto-Optical Recording S. Satomura, K. Hasegawa and M. Hiramatsu (<i>Canon, Japan</i>)	61
P6	A Multiple-Pulse Recording Method for Sampled Servo Phase-Change Optical Disks H. Minemura, T. Fushimi, Y. Miyauchi and M. Terao (<i>Hitachi, Japan</i>)	63
P7	Pulsed Laser Irradiated Magnetic Field Modulation Method for High Density Magneto-Optical Disk S. Yonezawa and H. Miyamoto (<i>Hitachi, Japan</i>)	65
P8	A Novel Disk Noise Measurement System J. P. de Kock, S. Kobayashi, H. Yamatsu and H. Ooki (<i>Sony, Japan</i>)	67
P9	An Analysis of Jitter in the Mini Disc System H.-K. Shin and I. Kim (<i>Samsung Elec., Korea</i>)	69
P10	Magnetic Heads for Magneto-optical Recording T. Miyake, J. Akiyama, S. Nagatome, N. Ogata and T. Ishikawa (<i>Sharp, Japan</i>)	71

Components (I)

Presider: Y. Honguh (*Toshiba, Japan*)

P11	Magneto-Optical Signal Read Out with a Waveguide TE/TM Mode Splitter T. Kihara, Y. Nakayama, S. Fujita, M. Aoki, A. Hiroe and K. Yokomori (<i>Ricoh, Japan</i>)	75
P12	Focus Error Detection Based on Shearing Interference Using a Phase Shifted Dual Type Grating H. Maeda, S. Ohuchida, K. Miyagaki and H. Funato (<i>Ricoh, Japan</i>)	77

P13	Improvement on the Pupil Obscuration Focus Sensing Method M. Karaki, M. Irie, T. Fujita and K. Kime (<i>Mitsubishi Elec., Japan</i>).....	79
P14	Increase of Storage Density with Higher NA Objectives Using Phase Shifting Filters T. Shimano and K. Tatsuno (<i>Hitachi, Japan</i>).....	81
P15	Fast Disk Skew Servo for Optical Disk Pickup N. Eguchi, M. Oka, H. Suganuma, K. Uemura, S. Kubota, H. Ueda, Y. Sugawara and K. Shintani (<i>Sony, Japan</i>).....	83
P16	Tracking Servo System of 2-Beam Separated Optical Head M. Suzuki, H. Tanaka, Y. Suzuki, K. Ohnishi, T. Sasaki and M. Inoue (<i>Hitachi, Japan</i>)	85
P17	Completely Split Optical Head D.-Y. Xu and Y. Wang (<i>Tsinghua Univ., China</i>).....	87

Components (II)

Presider: N. Matsubayashi (*Olympus, Japan*)

P18	Intracavity SHG Output Stability with 3at.% Nd:YVO₄ and KTP for High Storage Density Optical Disk T. Andou and K. Tatsuno (<i>Hitachi, Japan</i>)	91
P19	Compact SHG Blue Laser Using Quasi-Phase-Matched LiTaO₃ Waveguide Device Y. Kitaoka, K. Mizuuchi, K. Yamamoto, M. Kato, N. Ito and S. Mizuno (<i>Matsushita Elec. Ind., Japan</i>).....	93
P20	Low-Noise High-Power 680-nm AlGaInP Laser with Sub-GHz Frequency Response Y. Ueno, H. Sawano, S. Kawata, K. Hara, K. Tada, H. Hotta, K. Endo and K. Kobayashi (<i>NEC, Japan</i>).....	95
P21	Low Voltage Drive EO Modulator Using KTiOPO₄ H. Kikuchi, A.A. Godil, T. Fukui and S. Kubota (<i>Sony, Japan</i>).....	97

Coffee Break (15:20-15:40)

Break (17:10-18:30)

Panel Discussion (18:30-20:30)

—Higher Density Optical Recording Technologies and Their Application—

Presider: Y. Mitsuhashi (*NSG, Japan*)

Panelist: D.H. Shin (*Samsung Adv. Inst. of Technol., Korea*)

—Present and Future of Digital Video Disk Recorder—

T. Maeda (*Hitachi, Japan*)

—High Density Recording on Optical Disk Drive System—

S. Kubota (*Sony, Japan*)

—Optical Requirements for Visible Laser Sources for Higher Density Optical Storage—

H. Kawabata (*Matsushita Elec. Ind., Japan*)

—Advances in Optical Disk for High Density Recording—

M. Yamamoto (*NTT*)

—Multiplexing Holographic Storage—

M. Fujihira (*Tokyo Inst. of Tech., Japan*)

—Optical Memory by SNOM/AFM (SNOAM)— 101

July 13, 1994

High Density Recording (V) (9:45-10:45)

Presider: S. Tanaka (Matsushita Elec. Ind., Japan)

We A1 (Invited)
(9:45) Recording Code and Signal Processing for Optical Storage
S.Tazaki (*Ehime Univ., Japan*) 105

We A2 (Invited)
(10:15) Advances in the Development of Blue-Green Lasers
K.Akimoto (*Univ. of Tsukuba, Japan*) 107

Media (I) (10:45-12:25)

Presider: T. Fushiie (Mitsubishi Rayon, Japan)

We B1 Performance of Thin Substrate and Recording Characteristics of a 90mm Phase-Change Optical Disk
(10:45)
K. Furuya, M. Terada, T. Okamura, T. Nayuki and M. Nakao (*Asahi Chemical Ind., Japan*) 111

We B2 High-Density Magneto-Optical Disks with Cr Guiding Layers
(11:10)
R. Matsuda and K. Taki (*Brother Ind., Japan*) 113

We B3 High Density Optical Disk Mastering Machine
(11:35)
K. Taira, T. Nakano, I. Hoshino, T. Taguchi, T. Murakami, N. Takasu and M. Adachi (*Toshiba, Japan*) 115

We B4 Rapid Replication Process for CD-ROM
(12:00)
S. Horigome, Y. Miyamura, K. Muraoka, S. Satoo, T. Suzuki and U. Anzai (*Hitachi, Japan*) 117

Luch (12:25-14:00)

Media (II) (14:00-16:30)

Presider: H. Yamazaki (NTT, Japan)

We C1 Effect of Electron-Hole Pairs on the Melting of Phase Change Optical Disk Materials
(14:00)
M. Okuda, H. Inaba, H. Naito and T. Matsushita* (*Univ. of Osaka Pref. and *Osaka Sangyo Univ., Japan*) 121

We C2 Study of Initializing Conditions in Phase Change Media for Mark Edge Recording
(14:25)
S. Ohkubo, T. Ide, M. Murahata, M. Okada and T. Iwanaga (*NEC, Japan*) ... 123

We C3 Phase-Change Optical Recording Films with Ag-In-Te-Sb System
(14:50)
T. Matsusita, A. Suzuki, T. Nishiguchi, K. Shibata and M. Okuda* (*Osaka Sangyo Univ. and *Univ. of Osaka Pref., Japan*) 125

We C4 Readout Characteristics of Photochromic Optical Memory with a Super Low Power Laser
(15:15)
T. Tsujioka, F. Tatzono, T. Harada, K. Kuroki and M. Irie* (*Sanyo Elec. and *Kyushu Univ., Japan*) 127

We C5 (15:40)	Optical Recording Characteristics of Photochromic Media Y. Horikawa, A. Ishikawa, Y. Fujino, M. Hanazawa, K. Ohta*, H. Isono* and M. Irie** (<i>Kanebo, *Sharp and **Kyushu Univ., Japan</i>).....	129
We C6 (16:05)	A New Type of Spiropyran Derivative for an Optical Recording Medium on the Frequency Domain N. Shimidzu and H. Tokumaru (<i>NHK, Japan</i>)	131
SOM'94 Paper Award Presentation and Closing Remarks (16:30-17:00)		
	H. Ukita (<i>NTT, Japan</i>) Program Committee, Chairperson	