

2006 Optical Data Storage Topical Meeting

**Montreal, Quebec, Canada
23-26 April 2006**



IEEE Catalog Number:
ISBN:

06EX1211
0-7803-9494-1

**Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republications permission, write to IEEE Copyrights Manager, IEEE Operations Center, 445 Hoes Lane, Piscataway, New Jersey USA 08854. All rights reserved.

IEEE Catalog Number: 06EX1211
ISBN: 0-7803-9494-1
LOC: 2005932646

Additional Copies of This Publication Are Available from:

IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854
IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854
Phone: (800) 678-IEEE
 (732) 981-1393
Fax: (732) 981-9667
E-mail: customer-service@ieee.org

TABLE OF CONTENTS

Monday, 24 April 2006

MA	Holographic I	
MA1	The InPhase Professional Archive Drive OMA: Design and Function	3
MA2	Holographic Versatile Disc (HVD) System	6
MA3	M/# Requirements for Holographic Data Storage	9
MA4	Development of a Coaxial type Holographic Disc Data Storage Evaluation System, Capable of 500-fps-Consecutive Writing and Reading	12
MA5	Real-time Video Demonstration of Holographic Disk Data Storage System	15
MB	Components	
MB1	Development of Integrated Optical Pickup for Small Form Factor Optical Disc Drive	18
MB2	Composite Microstructures for Optical Data Storage	21
MB3	Spatial Light Modulators with Integrated Phase Masks for Holographic Data Storage.....	23
MB4	Stacked Planar Solid Immersion Mirror	26
MB5	Optical Pickup using Integrated Optical Unit for Blu-ray Disc	28
MB6	Novel Read-Out Technology for Multi-Layer Disk using Polarization Device	31
MC	Near Field I	
MC1	Technologies for Removability in a Near-Field Optical Disc System	34
MC2	Near-Field Induced Polarization Imaging for Optical Data Storage Metrology.....	37
MC3	Tracking Servo Method for the Gap Servo Near Field Optical Storage Systems	40
MC4	High Data Transfer Rate Cover-Incident Near-Field Recording System with a Solid Immersion Lens.....	43
MP	Poster Session & Welcome Reception	
MP1	Novel Optical System in HVD Drive	46
MP2	Demonstration of On-the-fly Recording on HVD	49
MP3	HVD Servo Actuator	52
MP4	The Angle Align Method of Reference Beam for Holographic Data Storage	55
MP5	Volume Holographic Storage using Spatial-Phase Multiplexing	58
MP6	Propagation Properties of Surface Plasmon along Metal Nano-Aperture and Nano-Wire	61
MP7	Polarization States in Near-Field Optical Recording System using a Solid Immersion Lens Illuminated by a Coherent Polarized Light.....	64
MP8	Material Selection and Disc Structure Optimization Studies for Super-Resolution Readout with PtOx Recording Layer	67
MP9	Blu-ray Type Super Resolution Near Field Optical Disk with $Sb_{70}Te_{30}$ or Sb_2Te_3 Mask Layer	70
MP10	Saturated Super-Resolution Imaging of Photonic Crystal with Negative Refraction.....	73
MP11	Crystallization Characteristics and Recording Mechanism of a-Si/Ni Bilayer and Its Potential for use in Write-Once Blue Ray Disk	76
MP12	Multi-Speed Blu-ray Disc with Superlattice-like Structure	79
MP13	Study for Increasing the Areal Density of 66GB using BD Dual Layer Disc.....	82
MP14	Influence of Al Doping on the Phase Change Kinetics of Eutectic $Sb_{70}Te_{30}$ Recording Film.....	85
MP15	Calibration of the Crystallization Properties of Mark Formation Model in Phase Change Optical Recording	88
MP16	Investigation of External Feedback Effects on Relative Intensity Noise Characteristics of 405 nm InAlGaIn Laser Diodes	91
MP17	Methodology to Simulate Parasitic Reflection and Birefringence in Optical Pickup Units and Sensors	94
MP18	Thermal Analysis of an Optical Pickup Actuator	97
MP19	A Biometric Access Personal Optical Storage Device	100

MP20	DVD Optical-Head with Fluorescent Detection	103
MP21	A New Type Flat Moving-Coil Actuator for Small Form Factor Optical Disk Drive.....	106
MP22	Coding and Signal Processing for Three Level Run-Length Limited Optical Recording Channel	109
MP23	Modulation Code and PRML Detection for Multi-Level Run-Length-Limited DVD Channels.....	112

Tuesday, 25 April 2006

TuA	Media & Testing	
TuA1	Blu-Ray Disc Cover Layer Production using Spin Coating Technology.....	117
TuA2	Application of Retarding Technology to Electron Beam Recorder	120
TuA3	150 GB, 6-Layer Write Once Disc for Blu-ray Disc System	123
TuA4	Sub-Nanosecond Pulsed Laser Studies of Phase-Change Recording Media	126
TuA5	Structure Analysis of ZnS-SiO ₂ Thin Film and Patterning by Heat-Mode Lithography	129
TuA6	Volumetric Phase Metrology for Optical Data Storage.....	132
TuB	Near Field II	
TuB1	Cover-Layer Incident Near-Field Recording: Towards 4-Layer Discs using Dynamic Tilt Control.....	135
TuB2	Cross-Talk Effects between Gap Error and Track Error Signals in a Gap Servo Near Field Optical Storage System	138
TuB3	High Numerical Aperture Hemisphere Solid Immersion Lens made of KTaO ₃ with Wide Thickness Tolerance.....	141
TuB4	Laser Diode Feedback Sensor Characterization Experiments for Data Storage Applications	144
TuB5	Feasibility Study on a 4-Layer Cover-Incident Near-Field Recording System	147
TuC	Holographic II	
TuC1	How to Write Good Books	150
TuC2	Shift Selectivity of the Collinear Holographic Storage System	153
TuC3	Detection Methods for Holographic Data Storage	156
TuC4	Optical System Designed for Coaxial Holographic Recording on Continuously Rotating Disc.....	159
TuD	Signal Processing & Applications	
TuD1	Overview of Video Application for DVD Media	162
TuD2	Information-Theoretic Limits of Two-Dimensional Optical Recording Channels	165
TuD3	A New d=1, k=10 Soft-Decodable RLL Code with r=2 MTR-Constraint and a 2-to-3 PCWA Mapping for DC-Control.....	168
TuD4	Adaptive Oversampling Rate Controller in Full-Digital Timing Recovery for Read Channel Systems	171
TuD5	Radial Tilt Adjustment Method with Partial Response Signal-to-Noise Ratio in High-Density Optical Recording	174

Wednesday, 26 April 2006

WA	High Density	
WA1	Prospects and Limitations for Large Numbers of Multi-Layers in Optical Data Storage	179
WA2	Multiplexed Optical Data Storage	182
WA3	High-Density Multilayer Optical Disc Storage.....	185
WA4	Analysis of Micro-Reflector 3-D Optical Disc Recording	188
WA5	Real Ability of PTM Proved with the Near Field	191
WB	Super Resolution	
WB1	Sub-Terabyte Optical Disc Realized by Three-Dimensional Pit Selection	194
WB2	Nano Recording and Readout on Optical Disk.....	197
WB3	Error Rate Improvement of 75 nm Super-RENS Signal in 405nm, 0.85 NA System	200
WB4	Super-RENS ROM Disc with Narrow Track Pitch	203
WB5	Multiphysics Simulation of Super-Resolution BD ROM Optical Disc Readout.....	206

WC	Holographic III	
WC1	Non-Volatile Holographic Data Storage Media based on Dye-Doped Thermoplastic.....	209
WC2	Micro-Holograms Recorded in a New Thermoplastic Medium for Holographic Data Storage	212
WC3	Tunable Blue Laser for Holographic Data Storage.....	215
WC4	Temperature Compensation Strategy for Holographic Storage	218
WC5	Media Tilt Tolerance of Bit-based and Page-based Holographic Storage Systems	221
WC6	Consumer Holographic ROM Reader with Mastering and Replication Technology.....	224