ADVANCE PROGRAM

ISOM'06

INTERNATIONAL SYMPOSIUM ON OPTICAL MEMORY 2006

IN COOPERATION WITH

The Institute of Electrical and Electronics Engineers (IEEE, LEOS)

Optical Society of America(OSA)

The International Society for Optical Engineering(SPIE)

The Institute of Electronics, Information and Communication Engineers (IEICE)

The Chemical Society of Japan

Information Processing Society of Japan

The Institute of Electrical Engineers of Japan

The Institute of Image Electronics Engineers of Japan

The Institute of Image Information and Television Engineers

The Japan Society of Precision Engineering

The Laser Society of Japan

SUNPORT TAKAMATSU
TAKAMATSU, KAGAWA,
JAPAN
OCTOBER 15-19, 2006

SPONSORED BY

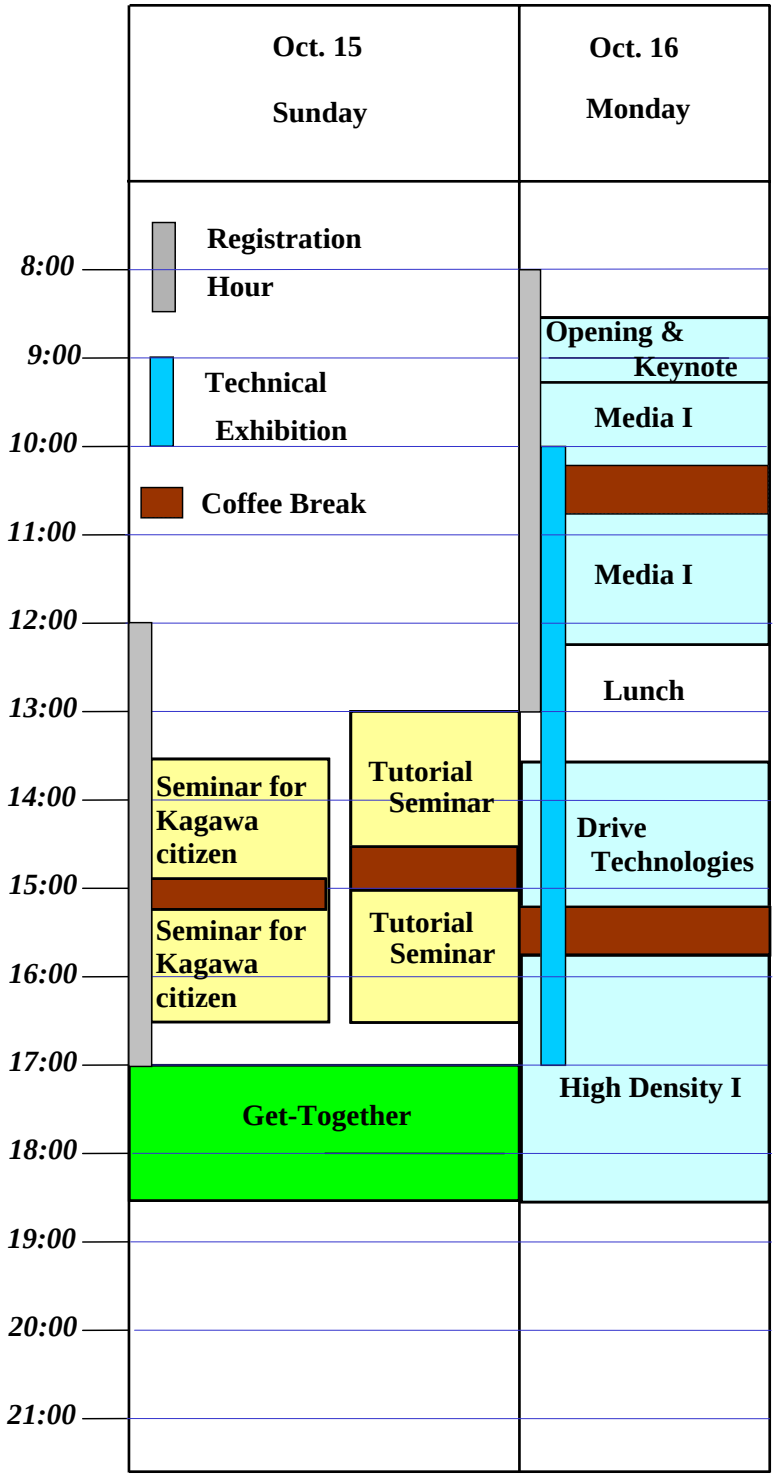
- The Japan Society of Applied Physics (JSAP)
- The Magnetics Society of Japan (MSJ)
- Optoelectronic Industry and Technology Development Association (OITDA)

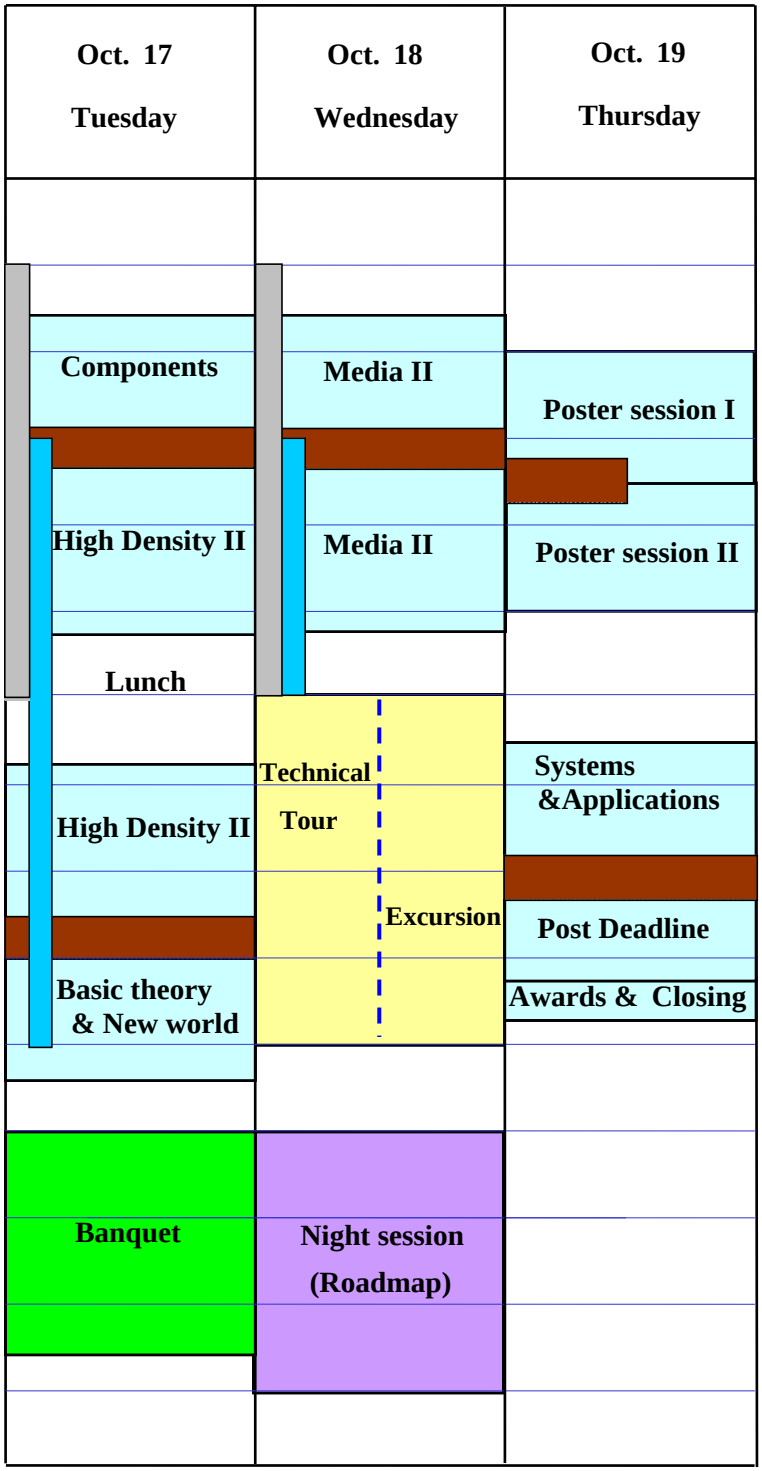
DEADLINES:

Post-deadline Papers: August 18, 2006
Pre-registration: September 15, 2006

http://www.isom.jp/

Symposium Schedule




Oct. 17
Tuesday
Oct. 18
Wednesday
Oct. 19
Thursday
Components
Media II
Poster session I
High Density II
Media II
Poster session II
Lunch
Technical
Tour
Systems
&Applications
High Density II
Excursion
Post Deadline
Basic theory
& New world
Awards & Closing
Banquet
Night session
(Roadmap)

WELCOME TO ISOM'06

WELCOME STATEMENT FROM THE ORGANIZING COMMITTEE CHAIRPERSON

The 16th International Symposium
on Optical memory(ISOM'06)
will be held in Takamatsu, Kagawa, Japan
October 15-19, 2006

It is our great pleasure to have the 16th International Symposium on Optical Memory (ISOM) meeting in Takamatsu. The first ISOM, or Symposium on Optical Memory (SOM) meeting was held in 1985 in Tokyo. Remarkable progresses of optical memory technology and industry have been made during these 20 years. Total amount of optical drives and media shipments all over the world in this year are expected to be 280M units and 17B pieces, respectively. Optical drives and media are now inevitable for our society. Major technologies supporting the current optical memory industry have been presented in the past ISOM meetings. The progress of the optical memory industry has been strongly supported by the progress of ISOM meetings.

This year is the starting year of the third generation optical drives and media using blue laser diodes. Higher storage capacity and data rate will provide us completely new surroundings for entertainments and information technologies. Cooperated with digital broadcasting, Internet and the flat panel displays, new digital entertainment world will be created. Researches and developments for the fourth generation optical memories have been becoming more popular these few years. Holography, Multi-layer recording, Near-Filed recording, and other high density recordings have been actively investigated as promising candidates for the fourth generation optical memories. Both third and fourth generation optical memories and even other technologies will be discussed in coming ISOM'06 meeting.

ISOM'06 meeting will be held on October 15th to 19th 2006 at Sunport Takamatsu in Kagawa prefecture, Japan. Welcome to ISOM'06 meeting in Takamatsu and the ISOM Committees hope that all of you enjoy the meeting.

Yoshito Tsunoda

Yoshito Tsunoda
Organizing Committee Chair person ISOM'06

INTRODUCTION

The 16th International Symposium on Optical Memory (ISOM) will be held from Oct. 15th to 19th 2006 at Sunport Takamatsu in Kagawa prefecture, Japan. The purpose of the symposium is to provide a forum for information exchange on broad range of topics covering science and technology in optical memories. This year, Blu-ray Disc and HD DVD consumer products have been shipped to the market. In addition, as discussed in ISOM/ODS2005, several novel approaches such as holographic, multi-level, three-dimensional, near-field and super-resolution technologies should be the main focuses on ISOM'06 for the next generation optical storage. The pure and applied theoretical studies in physics and mathematics will play a great role in further supporting and developing these new technologies. We welcome such novel proposals and basic concepts available to future storage technologies.

The symposium site, Sunport Takamatsu is located in Takamatsu city, the capital of Kagawa prefecture, and overlooking the picturesque Seto Inland Sea. Also there are many sightseeing spots in the city, such as Ritsurin Park, one of the most outstanding gardens in Japan, built by several generations of feudal lords in the Sanuki Country, and Mt. Yashima, the well-known site of a historic battle between the Genji and Heike clans in the 12th century.

SCOPE OF THE SYMPOSIUM

ISOM'06 will discuss the current status of optical memory system design and applications, together with new developments in the areas of media, lasers, basic theory, system sub-components, and a range of future technologies. In addition to ordinary contributed papers, a number of invited papers on important topics will be presented. Topics to be covered in this symposium include, but are not restricted to:

1. Basic Theory

- Diffraction, Polarization
- Analysis of Mark Formation

- Computer Simulation
- Near-Field Optics
- Structure Analysis

2. Media

- Rewritable, Write-Once, Read-Only Media
- Characterization, Recording and Readout Mechanisms
- Manufacturing Technology
- Substrates, Mastering
- Super-RENS & Super Resolution Media
- Tribology

3. Drive Technologies

- Drive Integration
- Drive Optics, Mechanics and Electronics Design
- Servo and Accessing Methods
- Read Write Channels, Error Correction
- Modulation Code
- Copy Protection

4. Components

- Optical Heads, Actuators, MEMS Fabrication
- Lasers, Lenses, Diffractive Optics, Detectors
- Short Wavelength Sources
- Integrated Optical Heads and Components

5. Testing Methods and Devices

- Testing & Evaluation Methods for Drives, Media and Components
- Drive Testers, Media Testers

6. Optical Storage Systems and Applications

- Rewritable, Write-Once, Read-Only Systems
- System Applications of Optical Recording
- Mobile Applications

7. High Density Recording

- Holography
- Scanning Probe and Near-Field Recording
- Multiwavelength Recording and Bistable Devices
- Photochromic and Photorefractive Materials
- Tera Byte and Sub Tera Byte Memories
- Volumetric Storage, Multi Level Recording
- Nano Memory and Materials
- Other Future Technologies

8. New World - Other Future Science and Technology available to Information Storage

REGISTRATION

Advance registration & hotel reservations

Kinki Nippon Tourist Co., Ltd. (KNT) has been appointed as secretariat for advance registration and hotel reservations for ISOM' 06. All registrations, reservations, cancellations etc. should be sent to:

ISOM'06 Desk
c/o Kinki Nippon Tourist, Co., Ltd., Takamatsu Office
Daiichiseimei Bldg.,
1-3-2, Kotobuki-cho, Takamastu-City, Kagawa,
760-0023 Japan
Phone : +81-87-851-3331 Fax : +81-87-851-3330
e-mail : takamatsu-ec@or.knt.co.jp

On-Site Registration

The registration desk will be located at the entrance lobby of Kagawa International Conference Hall on Sunday through Wednesday during the following hours.

Oct. 15: 12:00 - 17:00
Oct. 16: 8:00 - 13:00
Oct. 17: 8:00 - 13:00
Oct. 18: 8:00 - 13:00

Speaker and Presider Check-in

All speakers and presiders are requested to check in at the Session Registration Desk which will be located at the entrance lobby.

Registration Fees

Type	Before/on September 15, 2006	After September 15, 2006 / on site
Regular	¥45,000	¥50,000
Student & Retiree	¥3,000	¥3,000
Banquet	¥5,000	¥7,000
Additional Technical Digest	¥5,000	¥5,000
Tutorial seminar with a text	¥5,000	¥5,000

The registration fee for the symposium includes admission to all the technical sessions, a copy of the technical digest for Regular but not includes the technical digest for Student & Retiree.

Registration and Payment

Those who wish to attend ISOM'06 should access to ISOM website (http://www.isom.jp/), where the procedure of the registration is described. Online registration is highly recommended. In case where online registration is not convenient, you can register by submitting the Registration Form via Facsimile. The registration web site will be opened until October 6 and the advantage of early registration rate is available by **September 15, 2006**.

Payment should be made in Japanese yen by bank draft payable to ISOM'06 Kinki Nippon Tourist, bank transfer (inside Japan only) to the account shown below or credit card (Diners Club, AMEX, VISA, JCB and Master Card). No personal checks will be accepted. If unable to pay by these methods, please contact Kinki Nippon Tourist for alternative arrangements. On site payment should be made in Japanese yen only by cash.

*Bank transfer inside Japan

Bank Name	: Sumitomo Mitsui Banking Co., Kanto-Daiichi Branch
Account Name	: Kinki Nippon Tourist Co., Ltd
Account Number	: 5664119

*Please attach the acknowledgement of your remittance with your Registration Form.

Registration cancellation

The cancellation fee amounted ¥5,000 will be deducted from the refund. Cancellation should be made by also accessing to the registration page in ISOM website or in writing to Kinki Nippon Tourist, but no cancellation will be admitted after **October 2, 2006**.

INSTRUCTION FOR SPEAKERS

<ORAL PRESENTATIONS>

- Time assigned for:

		Presentation	Discussion
Keynote	(30 min.)	30 min.	
Invited	(25 min.)	20 min	5 min.
Contributed	(20 min.)	15 min.	5 min.

- Speakers are requested to report themselves to Session Registration Desk at latest 30 minutes before their session starts. The Session Registration Desk will be located next to the Registration Desk.
- All speakers are requested to get in touch with the presider at the Session Registration Desk 15 minutes before their session starts.
- The conference room will contain an LCD projector, a computer, a podium microphone, a screen and a projection pointer. Speakers may use their own computer. Please note that conference room equipment will not include a 35mm slide projector or an overhead projector.
- If speakers use their own computer, they will be requested to confirm its connection with the projector in the conference room during break time or in the morning. We recommend all speakers to have this check the day before their presentation.
- If speakers don't use their own computer, they are requested to submit their presentation materials in a CD-R/RW or USB memory to Session Registration Desk at latest one hour prior to their presentation after checking them in a designated place (Session Registration Desk or an anteroom). Only IBM computers and MS Power Point (.ppt) 97 or higher versions are available.
- We recommend all speakers to use more than 16-point font. The audience expects well-prepared presentations with clearly visible figures and captions, as well as good conclusion.

<POSTER PRESENTATIONS>

Each author is provided a 120cm high x 150cm wide bulletin board on which displays a summary of the paper.

- All authors are requested to affix their posters from 8:00 to

9:00 on October 19th and remove their posters from 12:00 to 13:00 on the same day.

- Authors must remain in the vicinity of the bulletin board at least for the duration of the assigned session (90 minutes). All papers are divided into two sessions, POSTER I (9:00-10:30) or POSTER II (10:30-12:00).
- The session presiders will check all authors during the assigned session time.

- The papers, which are not actually given a presentation including POSTER presentation, are regarded as "CANCEL".

POST-DEADLINE PAPERS

A limited number of papers will be accepted for presentation of significant results obtained after the deadline. A delegated author has to fill in the paper submission form including a 35-word abstract following the instruction for submission at the ISOM website (http://www.isom.jp/), and then a 2-page PDF summary should be submitted through the website. ISOM web submission service does not accept any PDF file including 2-byte characters (for example, Japanese, Chinese and Korean characters). The local fonts should be removed from the text body and figures before submission.

- **Submission Website is open from Jul. 31 to Aug. 18.**

Authors will be notified about the middle of September whether the paper is accepted or not.

The best four post-deadline papers are allowed as oral presentations in the final session. Other post-deadline papers (but limited numbers) will be presented in the poster session.

PUBLICATION OF SYMPOSIUM PAPERS

In addition to the Technical Digest available at the conference, the conference papers will be published as a special issue of the Japanese Journal of Applied Physics (JJAP) in June, 2007. The authors who

will have, by themselves, presented papers at ISOM'06 will be allowed and strongly encouraged to submit their papers for publication in this special issue.
The authors will be requested to download author's kits including an application form and a copyright form for the paper at www.isom.jp.
The deadline for submission of manuscripts is November 20, 2006.
Submitted papers will be reviewed based on the JJAP standard.

Canceled papers because of no presentation will NOT be submitted for publication in the JJAP special issue.

SPECIAL PROGRAM

(1) Tutorial Seminar

Tutorial Seminar is offered to expand your knowledge with technical information on current state of research and developments in optical memories.
The tutorial seminar contains two tutorials. Pre-registration using online registration or facsimile registration is advised due to limited class size. After filling the capacity, the pre-registration will be closed. Pre-registration procedure is described at ISOM website (http://www.isom.jp/).

Date & Time:	Sunday, October 15 13:00-16:30,
Place:	Conference Room #61, 6th floor, The Hall Building
Fee:	Regular; ¥5,000 (with a text) Student; free (no text) (After deadline of pre-registration, fee must be paid at Registration Desk, cash only)
Language:	English

T-1 13:00-14:30

Simplified Numerical Modeling of Holographic Memory

Prof. Tsutomu Shimura (The Univ. of Tokyo, Japan)

Numerical modeling to understand read and write characteristics of holographic memories will be presented. It is applicable to most systems, for example, collinear and angle multiplexing

systems, in which data page is Fourier transformed at the hologram.

Instructor Biography

Professor Shimura received his Ph.D. from Department of Applied Physics, the University of Tokyo in 1987 and is a Professor of Institute of Industrial Science, the University of Tokyo. His research field is on the photorefractive effects and femto-second nonlinear optics with quasi-phase matching devices, and holographic optical memories.

14:30-15:00 Coffee Break

T-2 15:00-16:30

Introduction to LDPC Codes and Their Application to Optical Disk Systems

Toshiyuki Miyauchi (Sony, Japan)

LDPC codes are regarded as one of the most powerful error correcting codes. In this presentation, basic principles of LDPC codes will be shown. In particular, recent results of their application to optical disk systems will be presented.

Instructor Biography

Mr. Miyauchi joined Sony Corporation in 1992. In 1995, he began research and development into error correcting codes, especially convolutional, turbo and LDPC codes. Since 2004 he has been a general manager with the Advanced Signal Processing Research Department, Sony Corporation.

(2) Social Program

· Get-Together Reception

Date & Time: Sunday, October 15 17:00 – 18:30

Place: Small Hall #2, 5th floor, The Hall Building

Fee: Free

All attendees including spouses are invited to the Get-Together Reception.

· Banquet and Entertainment

· Banquet Reception

Date & Time: Tuesday, October 17 18:00 – 20:30

Place: The Sky Dining View Restaurant, ALICE in

Takamatsu by QUEEN ALICE, 30th floor, The Tower Building

Fee: Advance registration ¥5,000
On-site registration ¥7,000

The ticket for the Banquet Reception is not included in the registration fee. Application can be made online. (The form is available on the ISOM website).

・**Banquet Entertainment** 《Sanukaito playing》

In the performance, we use the native stone "Sanukaito" which is very peculiar and can be found nowhere else but Kagawa. In 1891, a German geologist named the stone "Sanukaito", which means the native stone of Sanuki. The stone being ordered by a musical scale can make soothing sounds when struck.

Ms. Michiyo Usuki, the great Sanukaito player, presents the performance. She was born in Kagawa, and graduated from Toho Gakuen School of Music. She also specializes in marimba, percussion and Japanese drums, and passed NHK Yougaku (Western Music) audition. Currently, she is introducing Sanukaito music widely, and teaches at Kurashiki Sakuyou University, Music department.

(3) Technical Exhibition

Technical Exhibition is organized. The optical disc drives, media, components and application software from the leading companies and laboratories will be presented.

Date & Time : Monday, October 16 10:00 - 17:00
Tuesday, October 17 10:00 - 17:00
Wednesday, October 18 10:00 - 13:00

Place: Small Hall #2, 5th floor, The Hall Building

(4) Technical Tour

Technical Tour (Tentative)

Date & Time: Wednesday, October 18 13:00~17:00

Place: FUTEC INC. and RyuSyo Industrial Co., Ltd.

Cost: Free

Schedule: Sunport Takamatsu (13:00) ---bus --- FUTEC INC. (13:30-14:20) ---bus ---RyuSyo Industrial Co., Ltd. (14:50-16:20) ---bus ---Sunport Takamatsu (17:00)

< FUTEC INC.>
Defect detection units in inspection process for films, papers, clothes, plastics and metals are introduced.
< RyuSyo Industrial Co., Ltd.>
Auto refractometer, supercritical rinser & dryer and automatic visual inspector are introduced.

Please see ISOM website for more information.

(5) Seminar for Kagawa citizen

Seminar for Kagawa citizen will be held in the afternoon of the first day. The seminar fee is free. After filling the capacity, the seminar room will be closed.

Date & Time: Sunday, October 15 13:30-16:25
Place: Kagawa International Conference Hall,6th floor, The Tower Building
Fee: Free
Language: Japanese

「香川のヒーロー：平賀源内の足跡」 福田 安典（愛媛大学）
"Kagawa's hero, Gen-nai Hiraga": Y. Fukuda (Ehime Univ.)

「マイクロ・ナノマシン技術とは」 三原 豊（香川大学）
"What is the micro/nano-machine technology?":
Y. Mihara (Kagawa Univ.)

「光ディスク：市場をつくり 市場に変えられた 25 年」
岡崎 之則（パナソニック四国エレクトロニクス）
"History of Optical Disk : Impact to and from the market":
Y. Okazaki (Panasonic Shikoku)

「ホログラフィーと光メモリ」
久保田 敏弘（京都工芸繊維大学）
"Holography and Optical memory":
T. Kubota (Kyoto Inst. of Tech.)

(6) Special lecture for students in Kagawa

Special lectures for students in Kagawa will be held at two colleges and a high school. The lectures provide them with the great opportunity to learn much about the basic principle of optical

disks such as CD, DVD and also the everyday life of engineers of leading electronics companies in Japan.

Lecture Title:	"Basic principle of optical disks" 「光ディスクの原理」
Lecturers:	H. Miyamoto (Hitachi), 宮本　治一（日立） R. Katayama (NEC), 片山　龍一（NEC） M. Takeda (Sony), 武田　実（ソニー） H. Kanbara (NTT), 神原　浩久（NTT）
Places:	1) Takamatsu National College of Technology, 高松工業高等専門学校 2) Kagawa Prefectural Takamatsu-Kougei High School, 香川県立高松工芸高等学校 3) Takuma National College of Technology, 詫間電波工業高等専門学校

(7) Excursion

·Course 1　Isamu-Noguchi Garden Museum & Udon Lunch

Date & Time:　Wednesday, October 18　12:30-16:30

Course:　Sunport Takamatsu→Waraya (Udon Lunch) →The Isamu-Noguchi Garden Museum (http://www.isamunoguchi.or.jp/) →Sunport Takamatsu

Duration:　3hours

Meeting place:　ISOM'06 Registration desk (@12:15)

Fee:　¥6,000

Isamu-Noguchi is one of the most famous artists in the world and you can enter the art museum through the arrangement by ISOM'06 Secretariat. (Usually it is difficult to take a reservation to enter it.)

·Course 2　Kotohira-gu Shrine＆Udon-Lunch

Date & Time:　Wednesday, October 18　12:30-17:00

Course:　Sunport Takamatsu→Herb-en（Udon Lunch）→ The Kotohira-gu Shrine→Sunport Takamatsu

Duration:　4hours

Meeting plase:　ISOM'06 Registration Desk (@12:15)

Fee:　¥4,000

The slope, called the Sando Approach to Kotohira-gu Shrine, consists of 785 stone stairs. It takes about 80 minutes on foot.

HOTEL ACCOMMODATIONS

A block of rooms has been reserved by Kinki Nippon Tourist Co., Ltd. for the convenience of the participants. The rooms are to be reserved on a first-come first-served basis.

To ensure your reservation at the reduced convention rate, please make your hotel reservation today!

How to make hotel reservations

Those who wish to make hotel reservations should have access to ISOM website (http://www.isom.jp/), where the procedure of the hotel reservation is described. Online reservation is highly recommended no later than Fri., Sep. 15th, 2006 together with the payment of deposit (10,000 yen per room or, if you apply for 1-night single room, the single room rate of your preferred hotel) and handling charge (500 yen per room). The reservation website will be opened until Fri., Oct. 6th, 2006. In case where online reservation is not convenient, you can reserve by submitting the Reservation Form via Facsimile.

Hotel Name	Type	Code	Rate (¥)	Access	Internet
ANA Hotel Clement Takamatsu	Single room Twin (2 persons) Twin (1 person)	S-S S-T S-U	11,550 21,000 18,900	2 min. walk from JR Takamatsu Station	Available in all rooms
Righa Hotel Zest Takamatsu	Single room Twin (2 persons) Twin (1 person)	A-S A-T A-U	9,765 16,800 12,600	8 min. walk from JR Takamatsu Station	Available in several rooms
Takamatsu Washington Hotel Plaza	Single room Twin (2 persons) Twin (1 person)	B-S B-T B-U	8,085 15,120 10,500	8 min. by taxi from JR Takamatsu Station.	Available only near the front desk
Okura Hotel Takamatsu	Single room Twin (2 persons) Twin (1 person)	C-S C-T C-U	7,350 11,400 8,400	5 min. by taxi from JR Takamatsu Station.	Available in all rooms

*The above rates are per room including service charge and 5% consumption tax. No meal included.

*The hotel deposit will be deducted from your payment of hotel charges.

*No reservation will be made without payment of deposit and handling charges.

Payment

Payment must be completed in Japanese Yen when you make reservations either by bank draft, bank transfer or credit card. (For details, see Registration.)

Hotel Cancellations

Any kind of cancellation or reservation change must be submitted in writing to ISOM'06 Desk.

In case of cancellation of hotel reservation, your deposit will be refunded after deducting bank charge, commission and cancellation fee as follows. Please note that the handling charge cannot be refunded.

9 days or more prior to the date of arrival: No charge

8 to 2 days prior: 20% of one night accommodation fee

Fewer than 2 days prior, or no notice given:
100% of one night accommodation fee

GENERAL INFORMATION

(1) Official Language

The official language of ISOM'06 is English.

(2) Live Telecast

The live telecast of Oral Session will be served in Conference Room #61, 6th floor, The Hall Building.

(3) Message Board

Official Information Board and Message Board will be set near the Registration Desk. Message will be taken during registration hours on Sunday through Wednesday and posted on the Message Board. Please check the bulletin board daily to receive your messages. Messages for participants at the meeting should be directed to ISOM'06 Symposium Office. The telephone number for the Symposium Office at the Conference Site (Sunport Takamatsu) is shown at the back cover.

(4) VISA Requirement

You may be requested to show your visas upon entry to Japan. Please check with your governmental agency.

(5) Lunches

Lunches will not be served by the ISOM'06 Symposium Office.

All the attendees can have lunch on the 3rd floor in Maritime Plaza (The Hall Building, Sunport Takamatsu) where there are various kinds of restaurants.

(6) Access

It takes only one minute to ISOM'06 Conference Site (Sunport Takamatsu) from JR Takamatsu Station.

(7) Parking

There are about 1000 parking sections around Sunport Takamatsu. Guests may park there. Parking fee: ¥150 per 30 min.

(8) Others

Attendees will have access to a free Internet service during the week of the Symposium in the conference site. You may connect the Internet by yourself.

To receive further information about ISOM'06, please access to the ISOM website.

(9) Introduction of Takamatsu

The second-largest town on Shikoku, with a population of 420,000, Takamatsu, the capital of Kagawa Prefecture, is on the northeastern coast of the island, overlooking the Seto Inland Sea. If you want to know more about both Kagawa Prefecture and Takamatsu City, please refer to the following websites.

Kagawa Prefecture http://www.pref.kagawa.jp/foreigner.shtml

Takamatsu City

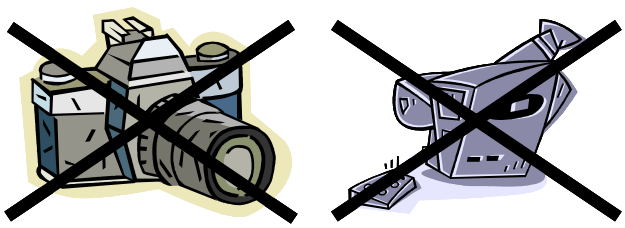
http://www.city.takamatsu.kagawa.jp/ENGLISH/index.html

Sunport Takamatsu http://www.sunport.or.jp

ATTENTION

It is not allowed to take a picture and video of any presentation-materials in ISOM'06.

No Photo **No Video**



TECHNICAL PROGRAM

October 16, 2006 (Monday)

Opening and Keynote Session (8:30-9:10)
Presider : H. Tokumaru (NHK, Japan)
Program Committee, Chairperson

Mo-A-01 (8:30)
Opening Remarks
Y. Tsunoda (Hitachi Maxell, Japan)
Organizing Committee, Chairperson

Mo-A-02 (Keynote)
(8:40) Optical Data Storage for the Information Society
J.A.M.M. van Haaren, F.J.A.M. Greidanus*, F.C. Bos** (Philips Research Europe, Netherlands, *Philips Research East Asia, China, **Philips Intellectual Properties and Standards, Netherlands)
In the digital information society people are being confronted with terabytes of valuable data. Consumers manage huge collections of documents, pictures, audio- and video-files. The presentation calls for a pro-active way to exploit the benefits of optical disc-based, removable storage for this.

Media I (9:10-12:10)
Presiders : Y. -J. Kim (CISD, Korea)
J. Tominaga (AIST, Japan)

Mo-B-01 (Invited)
(9:10) The Error Rate Improvement of Super-RENS Disc
J. Kim (Samsung, Korea)
The bER characteristics of the ROM and WORM random signal (75nm-minimum) will be presented. The gain controllable EQ, adaptive PRML and 5-symbol

write-strategy technologies were used for the improvement of the random signal characteristics.

Mo-B-02

(9:35) Effect of SiO_2 Addition to PtOx Recording Layer of Super-RENS Disc

T. Shima, T. Nakano, J. Tominaga (AIST, Japan)

We have studied on effect of adding SiO_2 to PtOx layer of a recent super-RENS disc. High-CNR super-resolution readout was achieved (44 dB@100 nm) and cyclability was improved (>70,000 times) using HD DVD-based optics.

Mo-B-03

(9:55) High-Speed Super-resolutional Readout Using GeTe Alloy Layer

K. Aoki, S. Ohkubo, R. Katayama, Y. Yamanaka (NEC, Japan)

A super-resolutional ROM disc using a GeTe alloy layer, which features a fast recrystallization speed after melting, has been developed. A high-speed super-resolutional readout at the linear velocity of 26.4 m/s has been successfully demonstrated.

Coffee break (10:15-10:45)

Mo-B-04 (Invited)

(10:45) Layer-Selection-Type Recordable Optical Disk for 1-TB Capacity

A. Hirotsune, M. Mukoh, Y. Fujita, Y. Amano, T. Maeda, M. Terao (Hitachi, Japan)

We introduce the concept of the layer-selection-type recordable optical disk (LS-R). Experimental results on some key technologies necessary for this method will be reported.

Mo-B-05

(11:10) Century Stable Quadruple-Layer BD-R Using Te-O-Pd Based Films

H. Habuta, M. Tomiyama, K. Takahashi, M. Tsukuda, N. Miyagawa, K. Nishiuchi, N. Yamada (Matsushita, Japan)

We have developed the quadruple-layer write-once disc with Te-O-Pd film on BD format. Experimental results proved that our write once disc is a good candidate of high-capacity and high-speed BD-R with high resistance to environment.

Mo-B-06

(11:30) Spacer Layer Formation for Multi-Layer Optical Disk by UV-LED Arrays

A. Kondo, T. Tagiri, M. Yoshimoto, S. Ohshima, T. Takishita (Pioneer, Japan)

A new method of forming the spacer layer of a multi-layer optical disk with sufficient thickness accuracy that used UV-LED was developed.

Mo-B-07

(11:50) Disc Fabrication for Three-Dimensional Pit Selection Using Damascene Process

Y. Anzai, J. Ushiyama, H. Minemura, T. Shintani (Hitachi, Japan)

The damascene process is introduced to fabricate a disc for Three-Dimensional Pit Selection to embed the super-resolution material in the pits on a ROM substrate. Results on chemical analyses and the readout experiment are presented.

Lunch (12:10-13:30)

Drive Technologies (13:30-15:15)

Presiders : Y. Tomita (Pioneer, Japan)
I. -S. Park (Samsung, Korea)

Mo-C-01 (Invited)

(13:30) Practical and Robust Near Field Optical Recording Systems

D. Bruls, C. A. Verschuren, J. van den Eerenbeemd, B. Yin, F. Zijp (Philips Research Laboratories, Netherlands)

Robust disc surfaces, smart lens designs, clever coding and advanced servo control using 3D actuators are essential in practical Near Field Recording (NFR) systems. We present an NFR system, which possesses these properties.

Mo-C-02

(13:55) Development of a Thin Film Disc Cartridge and a Compact Disc Changer for SVOD (Stacked Volumetric Optical Discs)

T. Yoshida, T. Shimizu, I. Naniwa, Y. Abe, K. Yoshida, K. Sato, H. Awano*, H. Ido*, T. Iida*, Y. Watanabe*, H. Kishi*, A. Inaba*, M. Tani*, H. Yamanaka*, S. Osawa*, M. Yoshihiro*, N. Ota* (Hitachi, Japan, *Hitachi Maxell, Japan)

We developed a stacked volumetric optical discs (SVOD) system that has a data capacity of 940 GB. This paper describes the prototype SVOD system, which consists of the disc cartridge and the disc changer.

Mo-C-03

(14:15) Feasibility Study on Contactless Power Supply for Layer-Selection-Type Recordable Multi-Layer Optical Disk

Y. Fujita, A. Hirotsune, Y. Amano (Hitachi, Japan)

Using rotary transformers, electric power is supplied to the drive mechanism of a layer-selection-type recordable multi-layer optical disk without any contact. The prototype transmits sufficient power to change the optical reflectivity of the rotating disk.

Mo-C-04

(14:35) High-Speed Tracking Servo Using ZPET-FF Method for Professional-Use Optical Disks Over 10000 rpm

D. Koide, H. Tokumaru, K. Ohishi*, T. Hayano*, I. Shibutani*, T. Miyazaki** (NHK, Japan, *Nagaoka

Univ. of Tech., Japan, **Nagaoka National College of Tech., Japan)

We present a high-speed tracking servo sytem using ZPET-FF control. The proposed method suppressed the tracking error to 6.3 nm at 10800 rpm (BD 13.3x) for a Blu-ray disc or broadcast-use optical disk recording system.

Mo-C-05

(14:55) Drive Considerations for Multilayer Discs

A. M. van der Lee, E. Altewischer (Philips Electronics, Netherlands)

We discuss the drive aspects that are relevant for multilayer discs.

Special attention is paid to coherent cross-talk. We show measurements on multilayer discs, and study possible ways to reduce the effect of coherent cross-talk.

Coffee break (15:15-15:45)

High Density Recording I (15:45-18:30)

Presiders : A. Hirao (Toshiba, Japan)
T. Shimura (The Univ. of Tokyo, Japan)
S. Yagi (NTT, Japan)
J. A. M. M. van Haaren (Philips, Netherlands)

Mo-D-01 (Invited)

(15:45) Holographic Professional Archive Drive

K. Curtis (InPhase Technologies, USA)

The architecture, design and function of a 300GB, 5¼ inch holographic recordable drive using media in a cartridge is described.

Mo-D-02

(16:10) Drive System for Micro-Reflector Recording Employing Blue Laser Diode

T. Horigome, K. Saito, H. Yamatsu, K. Hayashi, G. Fujita, T. Kondo, H. Miyamoto, S. Kobayashi (Sony,

Japan)

In this paper, some basic experimental results of the Micro-reflector recording are reported. Bit-by-bit reflection holograms were successfully recorded using a blue laser diode. We also realized servo systems for the future dynamic read/write experiments.

Mo-D-03

(16:30) Optical Noise Reduction for Coaxial Holographic Data Storage

S. Yasuda, Y. Ogasawara, J. Minabe, K. Kawano, M. Furuki, K. Hayashi, K. Haga, H. Yoshizawa (Fuji Xerox, Japan)

Reconstruction of positive and negative images from an identical hologram is demonstrated. Negative images are obtained by adding a DC component of the signal beam. Comparison of the two reconstructed images enables optical noise reduction.

Mo-D-04

(16:50) New Coaxial Interference Method for Consumer Holographic Memory

M. Sato, M. Ogasawara, Y. Ito, S. Tanaka, T. Iida (Pioneer, Japan)

We have developed new coaxial interference method using the bifocal lens. This method will be feasible for the next generation storage system for consumer use.

Mo-D-05

(17:10) Storage Density of the Collinear Holographic Memory

T. Shimura, Y. Ashizuka, R. Fujimura, K. Kuroda, X. Tan*, H. Horimai* (The Univ. of Tokyo, Japan, *Optware, Japan)

We discuss the storage density of the collinear holographic storage systems. Practically, number of the multiplexed pages recorded at the same area limits determines the storage density.

Mo-D-06

(17:30) Novel Encryption Method Using Multiple Reference Patterns in Coaxial Type Holographic Data Storage

M. Toishi, M. Hara, K. Tanaka, T. Tanaka, K. Watanabe (Sony, Japan)

We propose and demonstrate an encryption method using multiple reference patterns in coaxial type holographic data storage. Input data patterns are multiplexed at one spot using multiple reference patterns which are the key for readout.

Mo-D-07

(17:50) Coherent Parallel Copying of Holograms Recorded by Spatial Spread-Spectrum Multiplexing

T. Ito, A. Okamoto (Hokkaido Univ., Japan)

A hologram copying method in which multiplexed holograms are coherently copied from a master to a ROM medium is presented. A significant improvement in diffraction efficiency after coherent copying up to 1/M is experimentally demonstrated.

Mo-D-08

(18:10) Tilt Compensation Method of Two-Beam Angle Multiplexing Holographic Memory

Y. Matsumura, S. Hori, H. Sekine, K. Kogure, M. Shimizu (Sanyo, Japan)

We examined the radial tilt compensation method by rotating the disc toward the optimum position in a two-beam angle multiplexing holographic memory. We understood that this method improved tilt margin greatly.

October 17, 2006 (Tuesday)

Components (8:30-9:55)

Presiders : O. Koyama (Canon, Japan)
K. Ueyanagi (JST, Japan)

Tu-E-01 (Invited)

(8:30) Read-out Technology for Multi-layer Disc Using Polarization Longitudinal Slit

T. Ogata, T. Kawashima (Ricoh, Japan)

The technology that is able to read-out a multi-layer optical disc without layer cross-talk was developed. It miniaturized the optical pickup with the addition of only one parts.

Tu-E-02

(8:55) Blue-Violet Four-Beam Light Source Using Waveguides

K. Sasaki, N. Kawamura, H. Tokumaru, Y. Kuwana* (NHK, Japan, *Asahi Glass, Japan)

We fabricated a waveguide device that aligned four light sources at a pitch of 12 μm for recording in parallel. Four blue-violet beams with a high power and a small divergence angle were obtained.

Tu-E-03

(9:15) Investigation of Micro Solid Immersion Lens Mounting Systems

M. Lang, T. D. Milster, T. Minamitani*, G. Borek* (Univ. of Arizona, USA, *MEMS Optical, USA)

Concept, design and analysis of several solid immersion lens mounting systems utilizing a high-index refractive micro SIL is described. This paper proposes several designs for a mass produced inexpensive SIL assembly capable of 2.2 NA.

Tu-E-04

(9:35) Optical Design for the Optimum SIL with High NA and Large Tolerance

N. Choi, S. Shim, T. D. Milster*, J. Kim (Seoul National Univ., Korea, *Univ. of Arizona, USA)

Hyper SIL has an advantage of high NA gain. However, instability of it easily lowers the optical performance. We suggest a new system (Optimum SIL) which has high tolerance with a small NA resignation.

Coffee break (9:55-10:25)

High Density Recording II (10:25-15:30)

Presiders : C. -T. Chong (DSI, Singapore)
Y. Yamanaka (NEC, Japan)
M. Irie (Osaka Sangyo Univ., Japan)
C. -H. Tien (Nat'l Chiao Tung Univ., Taiwan)

Tu-F-01 (Invited)

(10:25) NFR Research for over 200 GB Capacity

Y. Sup Shin (LG Electronics, Korea)

Many results of NFR research has been re-confirmed experimentally by LGE. To accomplish over 200 GB and verify the commercialization feasibility of this technology, several new ideas including the novel optical designs have been proposed and under verifications.

Tu-F-02 (Invited)

(10:50) Group Track Structure Super-RENS ROM Disc: Increasing the Capacity along the Radius Direction of the Disc

K. Kurihara, Y. Yamakawa, T. Shima, T. Nakano, J. Tominaga (AIST, Japan)

We proposed a novel Super-RENS ROM disc (GTS-super-RENS ROM disc) with a narrow track pitch using a group tracking technique. The technique enabled to increase capacity in the radial direction up to 1.5-times.

Tu-F-03

(11:15) Towards a Multi-Layer Near Field Recording System, Dual-Layer Recording Results

J. M. A. van den Eerenbeemd, D. M. Bruls, C. A.

Verschuren, F. Zijp (Philips Research Laboratories, Netherlands)

We present a lens and compensation plate design capable of recording on a cover-layer incident dual-layer near field disk. At the conference we will present recording results on such a system.

Tu-F-04

(11:35) Decision Feedback PRML for Super-Resolution Media

R. Kasahara, T. Ogata, T. Kawasaki, H. Miura, K. Yokoi (Ricoh, Japan)

A new signal processing for super-resolution media was developed and bER equal to 4E-5 was achieved with actual read-out signal at the double density of blu-ray disc converted to optical properties of experimental setup.

Tu-F-05

(11:55) High-density Near-Field Recording on Cover-Layer Protected Discs Using an Actuated NA=1.45 Solid Immersion Lens

C. A. Verschuren, D. M. Bruls, B. Yin, J. M. A. van den Eerenbeemd, F. Zijp (Philips Research Laboratories, Netherlands)

We report on high-density near-field recording using an NA=1.45 Solid-Immersion-Lens and a cover-layer protected disc. Reliable recording and read-out is achieved at tangential densities 20% larger than the nominal NA-scaled value.

Lunch (12:15-13:45)

Tu-F-06 (Invited)

(13:45) Self-Assembling Process for Nano-patterned Media Using Diblock Copolymer

T. Matsuyama, Y. Kawata* (Pulstec, Japan, *Shizuoka Univ., Japan)

We present the self-assembling process for fabricating nanodot and nanohole arrays on a substrate using diblock copolymer. They are applicable to nano-patterned media in order to reduce the bit-error rate of an optical readout signal.

Tu-F-07

(14:10) Dynamic Performance of Volumetric Two-Photon -Absorbing Fluorescent Al_2O_3 Media

M. S. Akselrod (Landauer, USA)

Multilayer and mark-length readout in Al_2O_3 disk was performed at rotation speed of up to 3600 rpm. Clear eye diagrams were obtained at 3.2Mb/s. Monotones with CNR from 30 to 45 dB were demonstrated.

Tu-F-08

(14:30) Three-Dimensional Multilayered Fluorescent Optical Memory Using Two-Photon Reduction of Au(III)-ions

T. Tanaka, S. Kawata (RIKEN, Japan)

We propose a novel recording medium for three-dimensional multi-layered memory. This material stores bit data as fluorescent pattern using Rhodamine-B and Au(III)-ions. 3D structured disk and focusing/tracking servo system are also presented.

Tu-F-09

(14:50) Design and Fabrication of Thin-Film Diarylethene Recording Layer and Its Reflective Reproduction for Super-Multilayered Optical Memory

T. Shiono, T. Mihara, Y. Kobayashi (Matsushita, Japan)

We performed a feasibility study of two-photon absorption recording and reproduction in thin-film diarylethene laminated by space layers for super-multilayered optical memory. It was experimentally confirmed reflective reproduction can be possible in the multilayered medium.

Tu-F-10

(15:10) A Proposal of Roll-Type Optical Advanced Memory

M. Miyamoto, A. Ohta, Y. Kawata, M. Nakabayashi* (Shizuoka Univ., Japan, *Lintec, Japan)

We propose a concept of roll-type optical advanced memory. Multilayered media are fabricated easily by

winding two-layers film, which is composed of photosensitive layer and transparent pressure sensitive adhesives layer.

Coffee break (15:30-16:00)

Basic Theory & New World – Other Future Science and Technology Available to Information Storage (16:00-17:25)

Presiders : T. Tsujioka (Osaka Kyoiku Univ., Japan)
K. Ito (Ricoh, Japan)

Tu-G-01 (Invited)

(16:00) Understanding Structural Dynamics in the Phase-Change Memory Alloy $Ge_2Sb_2Te_5$

P. Fons, A.V. Kolobov, J. Tominaga, D. Brewe*, E. Stern**, T. Uruga***, H. Tanida***, N. Nakamura***, M. Suzuki*** (AIST, Japan, *PNC-XOR Advanced Photon Source, Argonne National Laboratory, USA, **PNC-XOR Advanced Photon Source, Argonne National Laboratory, Univ. of Washington, USA, ***JASRI, Japan)

A first look at structural dynamics in $Ge_2Sb_2Te_5$ will be presented. We have used a time-resolved optical-pump/x-ray probe experiment to carry out initial investigations of structural changes on nanosecond time scales using x-ray absorption spectroscopy.

Tu-G-02

(16:25) Optical Near-Field Focusing in Super-RENS Thin Film

J. Tominaga*, P. Fons*, S. Petit*, T. Shima*, K. Kurihara*, Y. Yamakawa*, T. Nakano*, A. Kolobov*,** (*AIST, Japan, **Univ. Montpellier II, France)

We estimated near-field light focusing depth on chalcogenide thin films by use of PtOx super-RENS disk. It was revealed that Sb_2Te showed a 31-nm focal depth

with good resolution and intensity.

Tu-G-03

(16:45) RMC Analyses Solve High-Speed Phase-Change Mechanism

T. Matsunaga*,**, R. Kojima*, N. Yamada*,**, S. Kohara**,***, M. Takata**,***,**** (*Matsushita, Japan, **CREST-JST, Japan, ***JASRI, Japan, ****SPring-8/RIKEN, Japan)

Structure analyses of the crystalline and amorphous $Ge_2Sb_2Te_5$ were performed by the reverse Monte Carlo (RMC) method using high-energy synchrotron x-ray diffraction data to elucidate high-speed phase-change mechanism.

Tu-G-04

(17:05) Optical Disk Head with Fluorescent Detection

T. Matsui, T. Shimomura (Funai, Japan)

For contents-delivery, media-key, user's-key and title-key are needed. Media-key comes from Burst Code Area; however, more powerful method is needed. So, this paper proposes DVD optical-head with fluorescent detection.

Banquet (18:00-20:30)

(ALICE in Takamatsu by QUEEN ALICE)

October 18, 2006 (Wednesday)

Media II (8:30-12:10)

Presiders : T. Iida (Pioneer, Japan)
J. -H. Kim (Samsung, Korea)
M. Takeda (Sony, Japan)
J. -Y. Kim (LG, Korea)

We-H-01 (Invited)

(8:30) Volumetric Optical Storage Media Technologies Targeting Tera Byte Capacity

N. Ota, T. Imazu, H. Awano (Hitachi Maxell, Japan)

For realizing Tera byte capacity optical storage, Holographic thick disc, Multilayered disc for far field recording and Stacked nano-inprinted thin films using conventional drives are under development and discussed on their future capabilities.

We-H-02

(8:55) Aerodynamic Stability and High Speed W/R Characteristics of Ultra Thin Disk for SVOD (Stacked Volumetric Optical Disks)

H. Awano, H. Ido, H. Kishi, A. Inaba, H. Yamanaka, M. Tani, S. Osawa, M. Yoshihiro, T. Iida, Y. Watanabe, N. Ota, T. Yoshida*, T. Shimizu*, I. Naniwa*, Y. Abe*, K. Yoshida*, K. Sato* (Hitatchi Maxell, Japan, *Hitachi, Japan)

In the SVOD (Stacked Volumetric Optical Disks) system, an aerodynamic stabilizer and high speed write and read result will be shown.

We-H-03

(9:15) Effect of Interface Layer to Phase-Change Recording Material Analyzed by HX-PES Method

T. Nakai, H. Yoshiki, N. Ohmachi (Toshiba, Japan)

The chemical and electronic states of a phase-change recording material using a high-speed rewritable HD DVD media was investigated for the first time by HX-PES method and obtained to novel effect of the interface layer.

We-H-04

(9:35) Metallic Nanorods Doped Optical Recording Media - the Use of Nanorods as Nano-Heat Sensitizers

J. W. M. Chon, C. Bullen, M. Gu, T. S. Kao*, H. W. Hsu*, Y. H. Fu*, D. P. Tsai* (Swinburne Univ. of Tech., Australia, *National Taiwan University, Taiwan)

We present optical recording results of metallic nanorods doped common optical recording media (phthalo-cyanine, azo-type dyes and GeSbTe) and demonstrate how nanorods can photothermally increase sensitivity and efficiency of the recording process.

Coffee break (9:55-10:25)

We-H-05 (Invited)

(10:25) Material Dependence in Thermal Direct Mastering

T. Sakai, H. Yamada, M. Yamamoto, H. Tajima, M. Shimo, N. Takamori, A. Takahashi (Sharp, Japan)

It was found that resin materials mainly determine the pit shapes in Thermal Direct Mastering. Applying suitable resins, a randam pattern with areal density of 34.8 Gbit/in^2 and a monotone of 40-nm-length pits were obtained.

We-H-06

(10:50) Phase-Transition Mastering of High-Density Optical Media

E. R. Meinders, R. Rastogi, M. van der Veer*, P. Peeters, H. Bulle, H. el Majdoubi*, A. Millet**, D. Bruls, I. Janssen, H. H. A. M. Kox, J. de Ruijter, E. Prins, C. A. Verschuren (Philips, Netherlands, *Singulus Mastering, Netherlands, **Philips, France)

We report on a new material system for high-density phase-transition mastering on blue and deepUV Laser Beam Recorders. Results of 25 GB BD-ROM and near-field ROM mastering are presented.

We-H-07

(11:10) Fabrication of Quartz Mold by Heat-mode Lithography and Dry Etching

H. Miura, K. Takeuchi, K. Hanaoka, N. Toyoshima, T. Mori, N. Iwata (Ricoh, Japan)

$ZnS\text{-}SiO_2$ patterns, which were formed by laser annealing and wet etching, were useful as hard masks for dry etching process. The pattern size with one-fourth of the laser beam spot was transferred onto quartz substrate.

We-H-08

(11:30) Approach of Improving Disk Performance to High Quality Gap Control in a Near-Field Optical Disk Drive System

T. Ishimoto, S. Kim, T. Yamasaki, T. Yukumoto, A. Nakaoki, M. Yamamoto (Sony, Japan)

We have successfully improved the control performance of the gap between a solid immersion lens and a disk by employing the disk with high damping characteristic in a near-field optical disk drive system.

Lunch (11:50-)

Technical Tour (13:00-17:00)

Night Session Roadmap (18:00-19:00)

Presiders : S. Higashino (Sony, Japan)

H. Tokumaru (NHK. Japan)

Night Session Roadmap Poster (19:00-21:00)

Presiders : S. Tanaka (Pioneer, Japan)

M. Itonaga (JVC, Japan)

(18:00) Overview

Abstract

T. Maeda (Hitachi, Japan)

ISOM has picked up five candidate future technologies, and made a roadmap of each technology toward 1 TB per CD size disk and 1 Gbit per second, considering the interface between them and five basic technologies.

Roadmap-1
(18:10) Holographic Memory

Roadmap-2
(18:20) Multi-Layer

Roadmap-3
(18:30) Two-Photon Absorption

Roadmap-4
(18:40) Super-RENS

Roadmap-5
(18:50) Near Field

Poster
(19:00) Key Technologies

October 19, 2006 (Thursday)

Poster Session I (9:00-10:30)

Presiders : T. Kikukawa (TDK, Japan)

K. Yokoi (Ricoh, Japan)

Th-I-01

Temperature Dependence of the Thermal Properties of Optical Memory Materials

M. Kuwahara, O. Suzuki, Y. Yamakawa, N. Taketoshi, T. Yagi, P. Fons, T. Fukaya, J. Tominaga, T. Baba (AIST, Japan)

We shall show the results of thermal conductivity (K) and heat capacity measurements of optical disk materials at high temperature. Simulations of disk temperature profiles were carried out using the temperature dependence of the K.

Th-I-02

Dual-Speed 25 GB Inorganic Write-Once Disk with Low-to-High Polarity

X. Hu, L. P. Shi, E. K. Chua, W. W. Wang, X. S. Miao, T. C. Chong (DSI, Singapore)

A dual speed inorganic Mg-Si write-once optical disk with low-to-high polarity has been developed. Effects of the multilayered recording layer structure and the low-to-high polarity on recording performance are discussed.

Th-I-03

A New Laser Labeling Technology for DVD-R Media

H. Kubo, M. Shibata, S. Yamada*, H. Itoga*, T. Fushiki* (Fuji Photo Film, Japan, *Yamaha, Japan)

A new labeling technology, "Labelflash^{TM}", is reported. This technology uses the DVD drive data recording head to burn high quality images directly into a specialized dye layer on the label side of DVD discs.

Th-I-04

Polarization Recording in Azobenzene Polymer Film for Optical Storage

D. Barada, H. Sumimura*, T. Fukuda, J. Y. Kim, M. Itoh*, T. Yatagai* (AIST, Japan, *Univ. of Tsukuba, Japan)

A novel optical recording technique was proposed using optical rotation in azobenzene polymer film. A helical structure was formed by illuminating a elliptically polarized light. The optical rotation was caused by the helical structure.

Th-I-05

Azopolymer/Liquid Crystal Complex for Polarization Holograms

H. Yoshizawa, J. Minabe, Y. Ogasawara, K. Hayashi, S. Yasuda, K. Haga, K. Kawano (Fuji Xerox, Japan)

We investigated the complex of the azopolymer and the photocurable liquid crystal as the new hologram medium that can record permanent polarization holograms. The new medium could also show 10 times higher birefringence.

Th-I-06

Super-Resolution Phenomenon: Periodic Structure and 'Single' Mark Towards Random Pattern

B. Hyot, Y. Desiéres, L. Poupinet

(CEA/ Léti, France)

The 'super-resolution' phenomenon in two typical cases: the periodic structure and the 'single' object. This paper is a starting point to analyse the readout process of random patterns and to find the suitable signal treatment.

Th-I-07

Cover-Layer with High Refractive Index for NFR Media

J. -H. Kim, J. -S. Lee, S. -H. Kim, J. -K. Seo* (LG Elite, Korea, *LG Electronics, Korea)

Cover-layer with high refractive index was prepared using the spin costing technique. The refractive index of the new material is more than 1.7, and the properties will

be discussed.

Th-I-08

The Relaxation Mechanism of Electrochromism of Tungsten-oxide Film for Ultra-Multilayer Optical Recording on Sputtering Conditions

R. Sato, N. Kawamura, H. Tokumaru (NHK, Japan)

A colored tungsten-oxide (WO_3) single-layer film spontaneously bleaches. The film microdtructure and bleaching relaxation time can be controlled by sputtering conditions. The bleaching relaxationtime is 1100 hours to 4300 hours.

Th-I-09

Complete DC Sputtering Process for Dual Layer BD-R Disc Production

N. Kato, N. Kozasa, N. Yamaoka, M. Yamaguchi, T. Takishita (Pioneer, Japan)

We confirmed the dual layer BD-R Disc with Bi-Ge nitride recording layer could be manufactured by the complete DC sputtering process with single chamber sputtering equipments.

Th-I-10

HD-DVD-R Disc with Organic Endothermic Dye Reducing the Thermal Interference on Multi-Tracks Recording

M. C. Li, A. Li, C. -W. Chen, C. -L. Huang, C. Hsien, C. -M. Lin*, W. -Y. Liao, T. -R. Jeng (ITRI, ROC, *NTUT, ROC)

In this study, we adopt a series of organic endothermic dyes as the recording layer for low-to-high HD-DVD-R to reduce the thermal interference from adjacent recorded tracks.

Th-I-11

Super-Resolution Recordable Disk with Modified Rhodamine Dye Recording Layer and Contrast Enhanced Layer

T. -T. Hung, Y. -J. Lu (I-Shou Univ., Taiwan, R.O.C.)

We have studied the characteristics of super resolution recordable disk with modified rhodamine recording layer

and contrast enhanced layer. It was possible to readout 200nm mark with CNR of 43dB and exhibit good readout durability.

Th-I-12

Pit Profile Simulation for HD DVD Mastering Process

R. Yamamoto, M. Matsumaru, N. Nakamura (Toshiba, Japan)

We developed HD DVD mastering process simulator, which reproduced the experimental pit profile very well.It was clarified that the development rate equation is similar to Hirai's equation in the semiconductor lithography.

Th-I-13

A New Write-Once Blu-ray Disc by Metallic Recording Material for Reducing the Cost

H. Fujii, H. Kakiuchi, Y. Tauchi*, T. Ido*, Y. Yoneda* (Kobe Steel, Japan, *Kobelco Research Institute, Japan)

This paper presents disc characteristics of new write-once BD for reducing the cost by using new metallic recording material. Jitter value showed about 10% after limit equalizer.

Th-I-14

Optical Response of Au-SiO_2 Nano Composites Thin Film in Near-field Optical Disk Structure

Y. H. Fu*, H. W. Liu*, T. S. Kao*, W. -C. Hsu****, S. -Y. Tsai****, D. P. Tsai*,**,***,**** (*National Taiwan University, Taiwan, **National Taiwan Normal University, Taiwan, ***Academia Sinica, Taiwan, ****Industrial Technology Research Institute, Taiwan)

In this study, various ratio of Au to SiO_2 of nano-composites thin film and its optical response have been studies by pump-probe laser system.

Th-I-15

Implementation of 28mm Diameter ROM Disk

M. C. Paek, Y. -G. Yoo, H. Ryu, K. Y. Kang (ETRI, Korea)

A 28mm diameter small size ROM disk was

implemented. The thickness was 0.6mm including cover layer 0.1mm. 320nm track pitch with 160nm min. mark size were formed.

Th-I-16

High Speed Flexible Optical Disk with Cylindrically Concaved Stabilizer

Y. Aman, N. Onagi, S. Murata, Y. Sugimoto, D. Koide*, H. Tokumaru* (Ricoh, Japan, *NHK, Japan)

We developed a new stabilizer for high speed driving of a flexible optical disk. The highest rotational speed promises a maximum transfer rate more than 600 Mbps based on the recording density of Blu-ray Disc.

Th-I-17

A New DC-free Run-Length Limited Code for High Density Optical Recording Channel

H. Hu, J. Pei, J. Xiong, L. Pan, D. Lu, D. Xu (Tsinghua Univ., P.R. China)

A new DC-free (1,10) run-length limited code, which is intended for high-density optical discs, is proposed and evaluated by experiments. New code can reduce the complexity of encoder/decoder, without compromising other essential recording parameters.

Th-I-18

Design of Highly Reliable Optical Pickup

M. Ochi, T. Ide, K. Izumi, M. Watanabe*, M. Satake* (Hitachi, Japan, *Hitachi Media Electronics, Japan)

We developed a method for modifying the combination of the ways to fix optical parts to the optical pickup case to reduce the position deviation of the beam spot on the detector.

Th-I-19

A Efficient Balanced Code Using Viterbi and Section Division for Holographic Data Storage

J. -S. Lee, Y. -S. Jang, S. -H. Lee, I. -H. Choi, B. H. Min (LG Electronics, Korea)

We have proposed the 6:8 balanced code using the Viterbi and the section division. In Result, modulated pages have more SNR by designed lookup-table and the

BER is significantly improved and some errors are corrected.

Th-I-20

Wiggling Jump Strategy for Multiple-Beam Optical Disc System

D. Chen, H. Goossens, N. Baumgartner, Q. Zhan (Philips Research East Asia, P. R. China)

By using the wiggling jump method for multi-beam optical storage the extra link-overhead caused by traditional translating jumps is avoided. This means a considerable reduction in cost and in power dissipation of the system.

Th-I-21

A New Efficient Run-Length Limited Code for Multilevel Read-Only Optical Disc

H. Hu, L. Pan (Tsinghua Univ., P. R. China)

A new efficient 4-ary run-length limited (2, 13) code with rate of 6/9 is introduced. This code can be used to simplify the replication of multilevel ROM discs, and reduce the complexity of Viterbi detector.

Th-I-22

Active Vibration Absorber with LQG Control in Optical Disk Drive

C. -S. Chang, T. -S. Liu, H. -C. Huang, S. -K. Lin, M. -T. Peng*, T. -R. Jeng* (National Chiao Tung Univ., Taiwan, R.O.C, ITRI, Taiwan, R.O.C)

This paper presents an active dynamic vibration absorber with a LQG control to reduce optical disk drives vibration at multiple rotating speeds. The absorber with LQG control is validated based on simulation results.

Th-I-23

Improvement of System Performance of the Optical Disc Drive Adopting Ferrofluidic Damper for Pick-up Actuator

B. Y. Song, D. J. Jang*, Y. B. Lee*, J. H. Lee (Seoul National Univ., Korea, *Toshiba Samsung Storage Technology, Korea)

Ferrofluidic damper controlled by saturation

magnetization for an optical pick-up actuator not only improves system performances like settling time and access time of disc drive but also remarkably delays temperature-rising due to over-current on coils.

Th-I-24

Development of 'L' Shape Rotary VCM Actuator for Ultra-Slim ODD Using Integrated Design Method

D. -J. Lee, S. -U. Kim, J. -S. Oh, J. -H. Yoo, N. -C. Park, Y. -P. Park, T. Shimano*, S. Nakamura* (CISD, Yonsei Univ., Korea, * Hitachi, Japan)

This paper proposed the 'L' shape rotary voice coil motor (VCM) actuator for ultra-slim optical disk drive (ODD) and the integrated design frame which integrated EM analysis, structural analysis, and design tools.

Th-I-25

Investigation on Life Expectancy of High-speed Recordable Optical Disks

M. Irie, J. Nishiki, K. Nakatani, Y. Okino*, T. Kubo** (Osaka Sangyo Univ., Japan, *Kansai Univ., Japan, **T. KUBO Eng. Sci. Office, Japan)

This study examined a life expectancy of high-speed DVD-R for the acceleration model. The life expectancy of archival performance was examined using the Arrhenius model and the Eyring model, and an analysis of statistical techniques.

Th-I-26

Evaluation of Thermal Tolerant in Initializing Thin Optical Discs

M. Kondo, T. Shintani, Y. Ogino*, K. Soga* (Hitachi, Japan, *Hitachi CP, Japan)

In this study, temperature change in thin phase-change optical discs with various substrate thicknesses was simulated to evaluate the thermal tolerance of the polycarbonate substrate in DC sheet beam initialization.

Th-I-27

Thermal Path Design for the Optical Pick-Up Reliability

H. C. Ryu, B. J. Dan, S. H. Yoo, I. H. Choi, B. H. Min

(LG Electronics, Korea)

To improve the optical pick-up reliability, the thermal properties were analyzed and verified through CAE and experimental method. Based on these results, a new thermal path concept was designed and applied to the new model.

Th-I-28

Multiplexing Method with Non-Coaxial Spherical Waves for Holographic Data Storage

Y. Nagasaka, K. Okada, T. Saeki, K. Hirano, A. Nakamura, M. Tanaka, T. Miyake, Y. Nakata, Y. Kurata (Sharp, Japan)

We describe new multiplexing method; in which shift, peristrophic, and angle multiplexing are combined. This method is suitable to maximize the data capacity of thick recording media.

Th-I-29

Hybrid Catadioptric System for Hologram and Disk Application

Y. -S. Lan, C. -H. Tien*, T. -R. Jeng (National Chiao Tung Univ., R.O.C, *ITRI, R.O.C.)

We reveal a new device for a optical data storage system. The volume of the system is the size of a PUH. It has compatibility with several conventional optical disk technologies.

Th-I-30

Elimination of Edge Enhancement on Hologram Refresh System Using Two Photorefractive Crystals

H. Ishii, A. Okamoto, T. Ito (Hokkaido Univ., Japan)

Edge enhancement is a factor of errors on hologram refresh system using two photorefractive crystals that is a potential candidate for holographic RAM. We eliminated the edge enhancement using a random phase plate.

Th-I-31

Reduction of Decay of Multiplexed Holograms in Selective Erasure Using Phase Conjugate Mirror

T. Sano, A. Okamoto, M. Bunsen* (Hokkaido Univ.,

Japan, *Fukuoka Univ., Japan)

We reduce the decay of the multiplexed holograms in photorefractive crystal by adjusting the incident condition. This leads to the increase of rewriting times and it increases by 20 times when 1000 holograms are multiplexed.

Th-I-32

Phase Compensation Method for the Holographic Data Storage

N. Ishii, N. Kinoshita, T. Muroi, H. Shiino, K. Kamijo, N. Shimidzu (NHK, Japan)

This paper reports the effects of phase fluctuation on the recording characteristics, describes a phase compensation method, presents the recording characteristics when the proposed method is used.

Th-I-33

Local Thermal Expansion in Super Resolution Near Field Structure

J. M. Li, L. P. Shi, H. X. Yang, K. G. Lim, X. S. Miao, T. C. Chong (DSI, Singapore)

Investigation focuses on the local strain-stress field in the laser beam spot region. The super resolution mechanism caused by the local internal stress is discussed.

Th-I-34

Field Properties of Coupled Plasmonic Resonances in a Multilayered Metallic Nanoslab

K. P. Chiu, D. P. Tsai (National Taiwan Univ., Taiwan)

We investigate the properties of plasmonic resonances of a layered structure consisted of single- and double-layered Ag films sandwiched by dielectric materials. The field enhancement properties due to coupled plasmonic resonances will be discussed.

Th-I-35

Thermal- and Laser-Induced Order-Disorder Switching of Ag-doped Fast-Growth $Sb_{70}Te_{30}$ Phase-Change Recording Films

Y. -S. Hsu, Y. -C. Her, S. -T. Cheng, S. -Y. Tsai

(National Chung Hsing Univ., Taiwan, R.O.C.)

Adding Ag into $Sb_{70}Te_{30}$ recording film can improve archival stability and recording sensitivity, however, initialization sensitivity will be scarified. Recording bits shall be smoothly switched between amorphous and/or crystalline at an adequate value of Ec/Em.

Th-I-36

Nano Recording and Dynamic Readout on Phase-Change Rewritable Optical Disk

S. K. Lin, S. Y. Chen, I. C. Lin, H. K. Chen, D. P. Tsai (National Taiwan Univ., R.O.C.)

The way to write smaller recorded marks on phase-change recorded layer of optical disks can be achieved through adjusting writing strategies and writing powers, and the corresponding dynamic readout signal can also be thoroughly studied.

Coffee break (10:15-10:45)

Poster Session II (10:30-12:00)

Presiders : S. Tanaka (Pioneer, Japan)

T. Okumura (Sharp, Japan)

Th-I-37

A New Tracking Servo System for Angle Multiplexing Holographic Data Storage Drives

K. Hayashi, N. Kihara (Sony, Japan)

We propose a novel tracking servo system for angle multiplexing holographic data storage drives with a specially designed PD array. The experimental results strongly supported the validity of our servo system.

Th-I-38

Control of Refractive-Indices of Pressure Sensitive Adhesives for the Optimization of Multilayered Media

M. Miyamoto, A. Ohta, Y. Kawata, M. Nakabayashi*

(Shizuoka Univ., Japan, *Lintec, Japan)

We demonstrated to control refractive indices of PSAs layers from 1.47 to 1.54. The index flexibility of PSA film layer is important feature for the optimization of medium structure.

Th-I-39

Shift Selectivity in Common-Aperture Holography

W. Hossfeld, J. Knittel, O. Malki, F. Przygodda, H. Richter, H. Trautner (Deutsche Thomson-Brandt GmbH, Germany)

Common-aperture holography is presented as a promising alternative to collinear holography. We measured and compared the shift-selectivity of holograms recorded with both methods.

Th-I-40

Neural Network Equalization for Holographic Data Storage

H. Osawa, N. Kawaue, Y. Okamoto, Y. Nakamura, H. Ochi*, S. Marukawa* (Ehime Univ., Japan, *Panasonic Shikoku, Japan)

The neural network equalization is proposed to reduce the influence of interpixel interference due to aperture restriction in holographic data storage. The neural network equalizer provides an SNR of about 1.8dB over the conventional equalizer.

Th-I-41

Comparison from M# Consumption Point of View for the Coaxial Holographic Storage Arrangements

Z. Karpati, K. Banko, G. Szarvas, S. Kautny, L. Domjan (Optimal Optik, Hungary)

There are two competitive arrangements for coaxial reflection type holographic storage. The system developed by OPTWARE and the system developed by European consortium. We modeled and compared these in the M# consumption point of view.

Th-I-42

High-Pass Filtering in Coaxial Holographic Data Storage

Y. Ogasawara, K. Kawano, K. Haga, J. Minabe, S. Yasuda, M. Furuki, K. Hayashi, H. Yoshizawa (Fuji Xerox, Japan)

We propose and demonstrate a new recording method that can reduce the wasted dynamic range of media, by applying a high-pass filter to remove the DC components of the both signal and reference beams.

Th-I-43

Selective Erasure of Photorefractive and Photopolymer Holograms for Rewritable and Secure Data Storage

M. Bunsen, H. Furuta, A. Okamoto* (Fukuoka Univ., Japan, *Hokkaido Univ., Japan)

We propose a selective erasure method of multiplexed holograms using double Mach-Zehnder interferometric arrangement. The experimental results reveal that the arrangement can erase not only the photorefractive but also the write-once type photopolymer holograms.

Th-I-44

Shift-Phase Code Multiplexing Technique for Holographic Memory

S. Honma, A. Satomi, S. Muto, A. Okamoto* (Yamanashi Univ., Japan, *Hokkaido Univ., Japan)

We propose the shift-phase code multiplexing technique for holographic memories. We give the basic experimental result and consider the phase pattern of the filter to suppress the crosstalk between adjacent holograms sufficiently.

Th-I-45

One-Beam Holographic Recording Using a Blazed Grating

J. Sasaki, A. Okamoto, T. Ito (Hokkaido Univ., Japan)

We propose a new one-beam holographic recording system. Holograms are recorded by the signal and its diffraction beams split by a blazed grating on the

medium, which leads to significant simplification of the optical system.

Th-I-46

A Modified LDPC Decoder Compensating Pixel Misalignment in Holographic Data Storage System

B. Chung, E. Hwang, P. Yoon, H. Kim, J. Park, J. Park* (Daewoo, Korea, *Hanyang Univ., Korea)

A modified Low Density Parity Check decoding scheme for holographic storage is developed and evaluated. It compensates the negative effect from neighboring pixels during decoding, which improves overall error correction performances when pixel misalignment exists.

Th-I-47

Design and Application of a Novel Lens System for the Near Field Optical Storage with Cover Layer Media

Y. S. Shin, I. G. Han, J. U. Lee, J. M. Park, J. K. Seo, I. H. Choi, B. H. Min (LG Electronics, Korea)

A novel focus lens system of NA over 1.6 was designed and tested for the NFR optical storage system with cover layer media. The SIL thickness was chosen at stable position but with high SA.

Th-I-48

Signal Readout Using Near-Field Optical Flying Head with a Triangular Aperture

M. Hirata, M. Park, M. Oumi, K. Nakajima, T. Ohkubo* (Seiko Instruments, Japan, *Toyo Univ., Japan)

We proposed the NF optical flying head with a triangular aperture, whose dimension is 1.6x1.6x0.9mm. We could demonstrate the advantage of the triangular aperture combined with polarization control in signal readout tests.

Th-I-49

Scattering Noise Analysis for Estimating Capacity Limit of Holographic Memory

H. Ochi, I. Kuwabara, K. Kasazumi*, T. Sugita*, S. Marukawa, K. Yamamoto* (Panasonic Shikoku, Japan, *Matsushita, Japan)

Simulations were performed to clarify a criterion of scattering noise for reliable data retrieval of holographic data storage. By using this result, maximum multiplexing volume became able to be estimated from material characteristics.

Th-I-50

Random Patterns Optical Multiple Recording by Rotating Fieldstone and Simulation of Hologram Multiplexing

Y. Ishii, Y. Takayama*, M. Irisawa, E. Watanabe, K. Kodate (Japan Women's Univ., Japan, *Japan Aerospace Exploration Agency, Japan)

We propose a simple, compact and high-security holographic optical memory system using the fieldstone with a rotary movement. We performed a numerical simulation of the hologram multiplexing and recorded 100 sample holograms experimentally.

Th-I-51

Analysis on Effect of Elliptical Gaussian Beam in SIL Based Near Field Recording Optics

H. Choi, W. -C. Kim, J. -S. Lim, Y. -J. Yoon, T. -H. Kim, T. S. Song, N. -C. Park, Y. -P. Park (CISD, Yonsei Univ., Korea)

In this study, we dealt with computations concerning the focusing of laser diode elliptical Gaussian beam truncated by a centered circular aperture under the consideration on vector field theory.

Th-I-52

Shift Multiplexing along Axial Direction in Reflection-Type Holographic Memory

M. Miura, O. Matoba, K. Nitta, T. Yoshimura (Kobe Univ., Japan)

We investigate a technique to record holograms not only in plane but also along the axial direction of a storage medium. We present shift selectivity and shift multiplexing along the axial direction of reflection holograms.

Th-I-53

Channel Modeling and System Optimization for Holographic Disk Storage

P. Yoon*,***, E. Hwang*, J. Moon*, J. Park*, J. Park**, G. Park*** (*Daewoo, Korea, **Hanyang Univ., Korea, ***Korea Univ., Korea)

The channel simulator covering various noises from disk rotation and phase mask misalign as well as conventional asymmetric inter-symbol interference is developed and applied to improve system performance by optimizing several system parameters.

Th-I-54

Characterization of GOL for Holographic Optical Disc

J. Kim (Samsung, Korea)

The areal recording density for holographic optical data storage using the generalized objective lens(GOL) was analyzed based on the multiplexed holograms. The selectivity turned out to be about 2~3 microns.

Th-I-55

Multi-Dimensional Multi-level Optical Recording

L. P. Shi, T. C. Chong, X. S. Miao, X. Hu, G. Q. Yuan, H. F. Wang, L. H. Ting, J. M. Li, L. T. Ng, W. L. Tan (DSI, Singapore)

A new concept of multi-dimensional multi-level recording is proposed to fully use different parameters of light to achieve ultra high density. An example was taken to use both reflection and polarization to demonstrate the concept.

Th-I-56

Optical and Thermal Analysis of Nano-Patterned Medium Structure for Near-Field Optical Memory by Using FDTD Method

H. Fukuda, T. Yamaguchi, J. Takahashi, K. Yokomori (Ricoh, Japan)

We present optical and thermal analysis of nano-patterned medium by using FDTD method. The near-field coupling efficiency and the thermal property

of optical recording material is both important to design the optimal medium structure.

Th-I-57

Servo Study of Radially Polarized Beam in High-NA Optical Data Storage System

T. -H. Lan, C. -H. Tien (National Chiao Tung Univ., Taiwan, R.O.C.)

In this paper, we study the servo signals of weakly aberrated high-NA ODS system with radially polarized beam, and compare the results with that of the linearly polarized beam.

Th-I-58

Integration of Overall Error Reduction for Holographic Data Storage System

J. H. Kim, S. -H. Kim, J. Yang, H. Yang, J. B. Park, Y. -P. Park (Yonsei Univ., Korea,)

In this paper, suggest integration of overall error reduction for holographic data storage system. Therefore, It is possible that Disk tilt error, Position error and IPI noise error are corrected by our error reduction algorithms

Th-I-59

Constrained Code and PRML Detection for High Density Multi-Level Optical Recording Channels

J. Pei, H. Hu, L. Pan, J. Xiong, Q. Shen, H. Hu, D. Xu (Tsinghua Univ., P.R. China)

A new efficient 4-ary RLL(1,4) code with its DC control scheme is proposed for high density multi-level optical recording channels. PRML detection are adopted to evaluate the BER performance of proposed modulation on such channels.

Th-I-60

Nano Recording Marks on As-deposited $Ge_2Sb_2Te_5$ Phase-Change Nano Thin Film

T. S. Kao*, H. K. Chen*,****, I. -C. Lin*, C. H. Chu*,****, Y. H. Fu*, H.-P. Chiang*,****, D. P. Tsai*,**,*** (*National Taiwan Univ., Taiwan, R.O.C, **National Taiwan Normal Univ., Taiwan, R.O.C,

***Academia Sinica, Taiwan, R.O.C, ****National Taiwan Ocean Univ., Taiwan, R.O.C)

For the further study of ultra-high density recording, we investigate the recording marks on as-deposited phase-change recording layer and its performance of ultra-high density recording.

Th-I-61

Sequential Superimposing of Holograms Using 1 Dimensional Spatial Light Modulator

J. S. Yi, Y. H. Lee, H. W. Park*, S. K. Yun* (Sungkyunkwan Univ., Korea, *Samsung, Korea)

We proposed the sequential superimposing method for holographic recording using 1 dimensional spatial modulator. Our recording method could improve storage density and data transfer rate.

Th-I-62

Toward Biological Diagnosis System Based on DVD Technology

T. Arai, S. C. B. Gopinath, H. Mizuno, P. K. R. Kumar, K. Awazu, J. Tominaga (AIST, Japan)

A spinning-disk biosensor utilizing an optical interference of reflected lights from a multilayer structure consisting of dielectric, metal, and phase-change thin films is proposed.

Th-I-63

Ultrafast Amorphization Induced by a Single Femtosecond Laser Pulse in a GeSbTe Film

M. Hosoi, S. Kamata, F. Kannari, T. Saiki (Keio Univ., Japan)

We measured the amorphization dynamics of a crystalline GeSbTe film induced by a single femtosecond laser pulse. The reflectivity was reduced by ~5% within 5 ps due to the transition to a transient disordered state.

Lunch (12:00-13:30)

Optical Storage Systems and Applications (13:30-14:50)

Presiders : K. Tanaka (Teikyo-Heisei Univ., Japan)

N. -C. Park (CISD, Korea)

Th-J-01

(13:30) Up to 12x BD-R (Cu:Si) Recording

R. G. J. A. Hesen, J. H. G. Jaegers, A. P. G. E. Janssen, J. Rijpers, P. R. V. Sonneville, J. J. H. B. Schleipen (Philips Research, Netherlands)

This paper discusses 10x and 12x recording experiments on Cu:Si-based BD-R discs. Jitter values down to 7% have been measured. The implications of high speed recording on servo bandwidths and system margins will be addressed.

Th-J-02

(13:50) Optical Correlator for Face Recognition Using Collinear Holographic System

E. Watanabe, M. Ohta, Y. Ichikawa, K. Kodate (Japan Women's Univ., Japan)

We propose a new optical correlator that integrates the optical correlation technology used in FARCO and collinear holography. From preliminary correlation experiments, we achieved excellent performance of high correlation peaks and low error rates.

Th-J-03

(14:10) Protecting Method for External Shock in Near-Field Recording System

Y -J. Yoon, S. -H. Kim, Y. Lee, W. Seol, J. -G. Kim, N. -C. Park, H. Yang, Y. -P. Park (CISD, Yonsei Univ. Korea)

In this paper, to solve the external shock problem in a NFR system, we propose a concept of avoiding the external shock with a protector and show the simulation results.

Th-J-04

(14:30) Deck Mechanism for T-Skew Adjustment in a SIL Based Near-Field Optical Storage System

M. -H. Jeong, G. Kim, S. -H. Hong, J. -M. Park, D. -H. Son, J. -K. Seo, I. -H. Choi, B. H. Min (LG Electronics,

Korea)

Of very small gap distance between SIL bottom and the surface of media, relative tilt tolerance is limited. In this paper we presented some method for t-skew adjustment within small tilt margin.

Coffee break (14:50-15:20)

Post-deadline Papers (15:20-16:20)

Presiders : J. Tominaga (AIST, Japan)

M. Takeda (Sony, Japan)

The best 4 post-deadline papers are orally presented.

Awards, Announcement of ISOM'07 and Closing Remarks (16:20-16:40)

H. Tokumaru (NHK, Japan)

Program Committee, Chairperson

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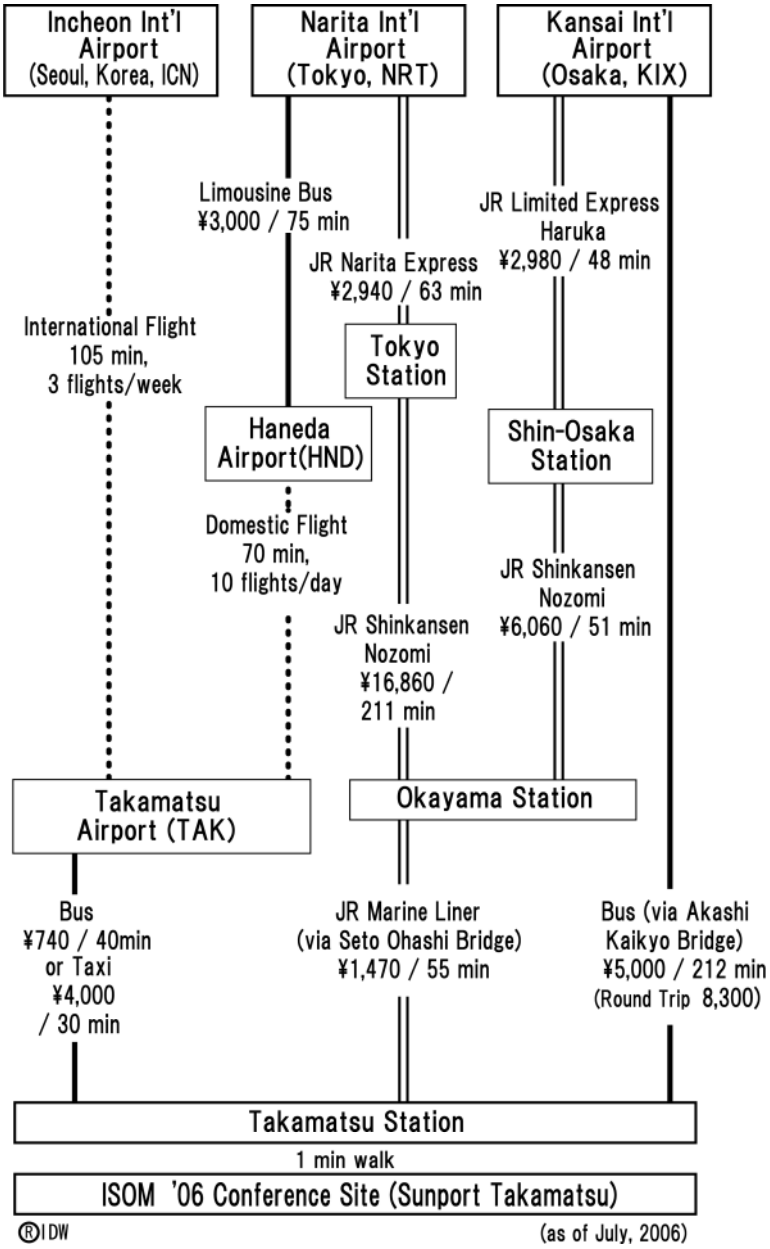

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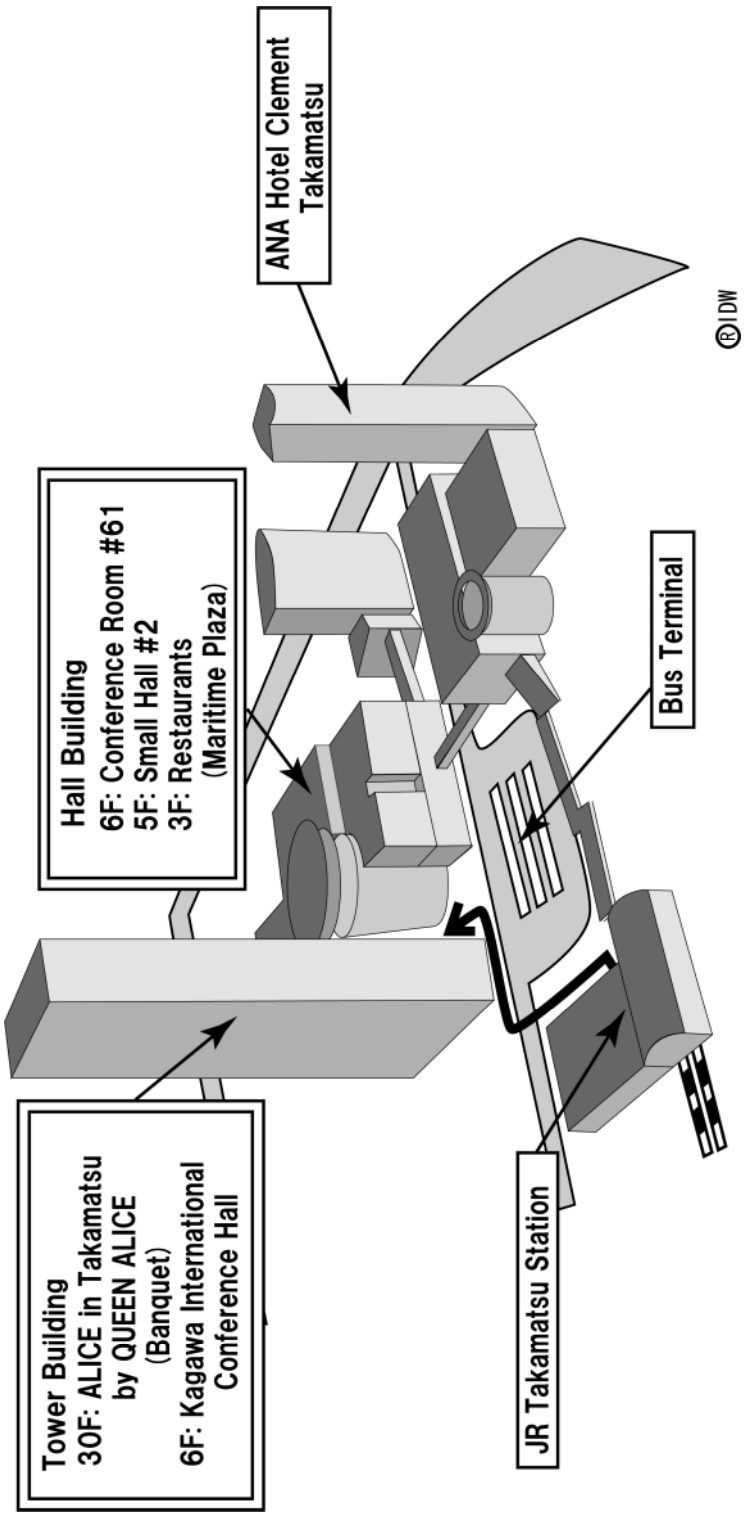

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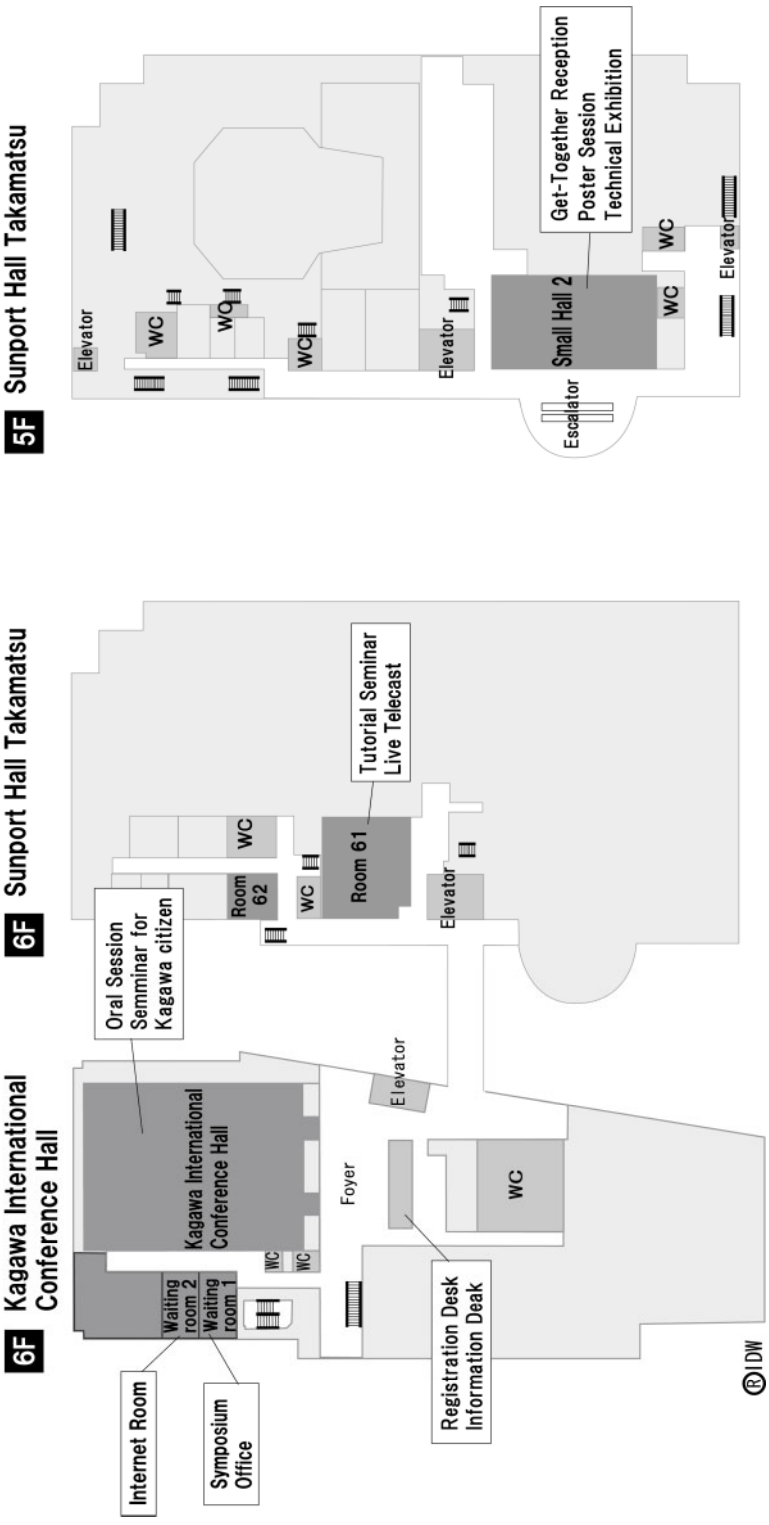
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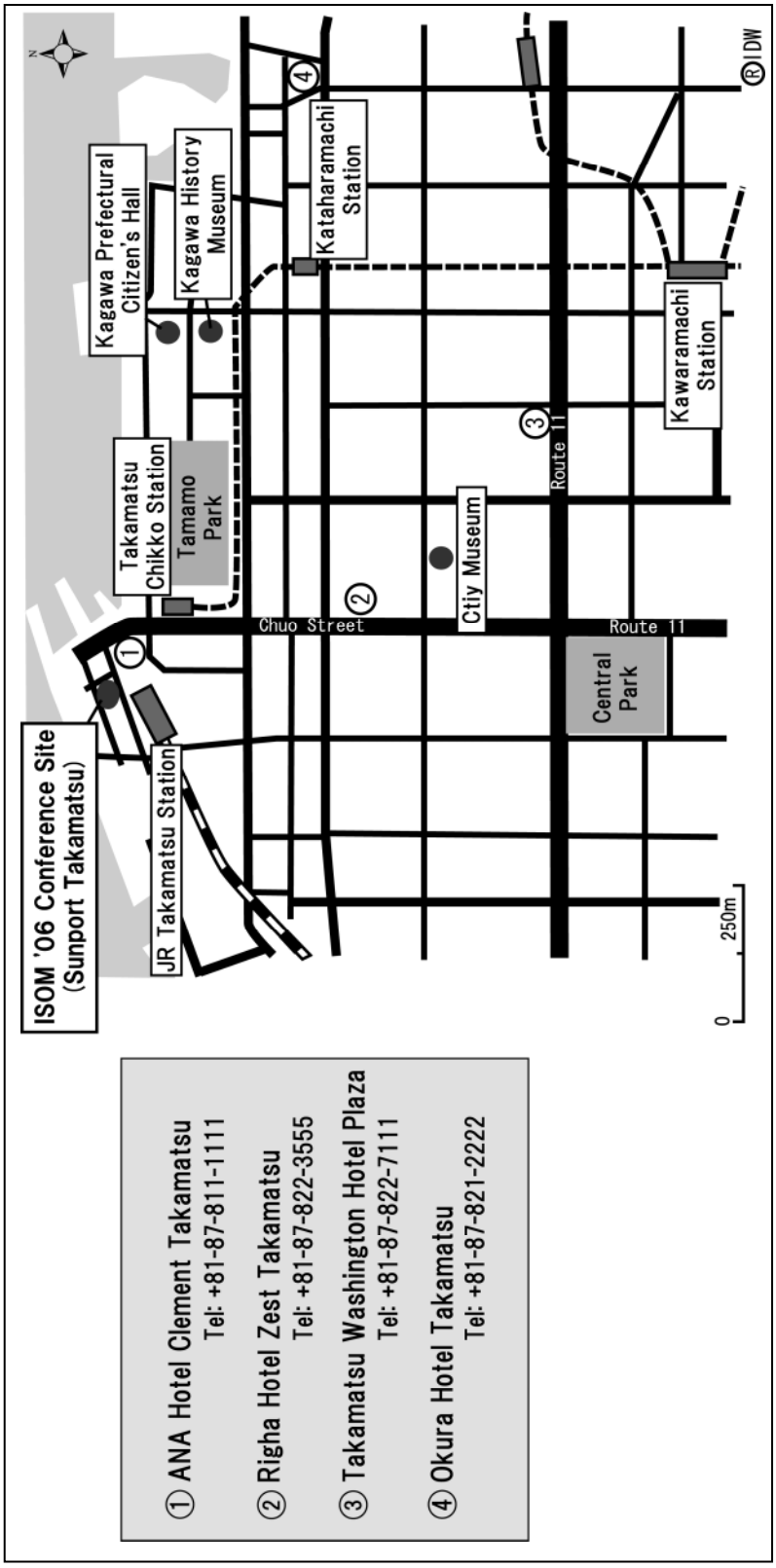

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During the Symposium (Oct.15－Oct.19, 2006)

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