

Colloquium on Functional Magnetic Materials and Future Magnetics

The 100th Anniversary
Magnetics Lab Seminar

WHEN

March 11-12, 2016

WHERE

**Room A2-201,
Toyohashi University of Technology,
1-1 Hibari-Ga-Oka,
Tempaku, Toyohashi
Aichi, Japan**



Colloquium on Functional Magnetic Materials and Future Magnetics

– *The 100th Anniversary Magnetics Lab Seminar* –

Dates: March 11-12, 2016

Venue: A2-201, Toyohashi University of Technology, Japan

Introduction



It is my great pleasure to host the 100th memorial Magnetics Lab Seminar at Toyohashi University of Technology (TUT). At the first seminar, organized in 1999 by the Spin Electronics group of TUT, Dr. Izaki from Osaka Municipal Technical Research Institute (now, he is a full professor of TUT) gave a lecture on the formation of functional electronic materials by means of soft solution processes. Since then, 126 prominent researchers and leaders in various fields have been invited to the seminar from all over the world (the Czech Republic, the US, Germany, Russia, Korea, Sweden, Taiwan, France, Spain and of course Japan) as you can see listed in the latter part of this brochure.

The seminar is basically composed of a one-hour lecture by the invited speaker followed by a frank and full discussion. The talks function in the manner of tutorials, covering a wide range of topics including everything from the fundamentals to the most up-to-date developments. As such, they are perfectly tailored for an audience which includes graduate and undergraduate students who are still learning about their field. So far, 28 seminars have been carried out in English, providing good opportunities for students to experience international style presentations and discussions.

To celebrate the 100th seminar, it was our great hope to be able to invite all the speakers who have contributed since these seminars began. Unfortunately however, due to unavoidable logistical constraints, we have had to trim the program to the 12 distinguished lecturers shown in this brochure. These presenters have come to be with us today from the US, Japan, Russia, Sweden and Korea. They include co-supervisors of doctoral-course students of TUT's MEXT leading program, as well as valued research collaborators and advisors. The main topic of this 100th memorial seminar is "Functional magnetic materials and future magnetics," which will cover discussions on a variety of topics including fundamental science, materials, devices and systems. We look forward to your active participation in the seminar.

Mitsuteru INOUE
Executive Trustee and Vice President
Professor of Graduate School
Toyohashi University of Technology

A handwritten signature in black ink that reads "Mitsuteru Inoue".

Program

March 11 (Friday), 2016



10:00 Prof. Mitsuteru Inoue
Toyohashi University of Technology, Japan
“Welcome Speech, and Our Laboratory Now”



10:15 Prof. Michael V. Bove
Massachusetts Institute of Technology, USA
“Holographic Video: Materials, Computation, and Perception”



11:00 Associate Prof. Takunori Taira
Institute for Molecular Science, Japan
“Giant Micro-Photonics for Energy - Micro-Domain Controlled Lasers Using Magnetic Field and Spin-Orbit Interaction -”

11:45 Lunch break (Poster session)



13:00 Prof. Hiroshi Yoshikawa
Nihon University, Japan
“Computer-Generated Holograms for 3D Display”



13:45 Dr. Koji Sekiguchi
Keio University, Japan
“Nano Magnonics in Cooperation with Spin-Current”

14:30 Break



15:00 Prof. Alexander B. Granovsky
Lomonosov Moscow State University, Russia
“Magnetic, Magnetocaloric, Magnetotransport and Magneto-optical Properties of Heusler Alloys”



15:45 Prof. Nikolai S. Perov
Lomonosov Moscow State University, Russia
“Smart Magnetic Materials Investigation on Magnetism Department of MSU”

18:00 Banquet at LOISIR HOTEL TOYOHASHI

Program

March 12 (Saturday), 2016

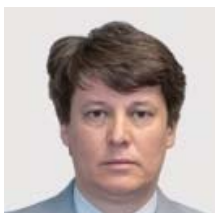


10:15 Prof. Alexander M. Grishin
Royal Institute of Technology, Sweden
“Biocompatible Films and Nanofiber Scaffolds for Bioengineering, Multimodal Bioimaging and Sensors”



11:00 Prof. Koki Takanashi
Tohoku University, Japan
“Advanced Spintronic Materials Based on Ordered Alloys”

11:45 Lunch break (Poster session)



13:00 Prof. Andrey A. Fedyanin
Lomonosov Moscow State University, Russia
“Recent Advances in Magnetophotonics of Nanostructured Materials”



13:45 Prof. Jun Akedo
National Institute of Advanced Industrial Science and Technology, Japan
“Discovery of Room Temperature Impact Consolidation (RTIC) Phenomena and Application to Ceramic Coating”

14:30 Break



15:00 Prof. Kwang-Ho Shin
Kyungshung University, Korea
“pT-class Magnetic Sensor for the Purpose of Military Applications”



15:45 Prof. Caroline A. Ross
Massachusetts Institute of Technology, USA
“Magnetic Garnet Films for Spintronics, Magnonics and Magneto-optics”



16:30 Prof. Hironaga Uchida
Toyohashi University of Technology, Japan
“Closing remarks”

Invited speakers for the past seminars

	Date	Name	Affiliation	Title
No. 1	1999/4/23	Masanobu Izaki	Osaka Municipal Technical Research Institute	ソフト溶液プロセスによる機能性電子材料の形成
No. 2	1999/5/6	Kazushi Ishiyama	Tohoku University	3次元空間を自由に動く磁気マイクロマシンと医療への応用
No. 3	1999/6/25	Pavel Ripka	Czech Technical University	高感度磁界センサ:フラックスゲートおよび磁気抵抗素子の最近の動向
No. 4	1999/6/29	Masanori Abe	Tokyo Institute of Technology	日米比較—生活と教育の場で
No. 5	1999/7/9	Kwang-Ho Shin	Tohoku University	磁歪・圧電ハイブリッド構成による高精度マイクロ・スマートアクチュエータ
No. 6	1999/7/12	Masanori Honda	Honda Electronics Co., Ltd.	社会人博士課程テーマの企業における実践—液体中における超音波非線形現象の研究—
No. 7	1999/7/28	Kazuhiro Yamaguchi	National Institute of Technology, Ibaraki College	ゾル・ゲル法による磁性セラミックの作製
No. 8	1999/10/13	Jiro Yamasaki	Kyushu Institute of Technology	アモルファス磁性体の磁壁、磁区と磁気特性
No. 9	1999/11/11	Kenichi Arai	Tohoku University	磁気マイクロマシンとマイクロ磁界センサ
No. 10	2000/6/23	Masahiro Yamaguchi	Tohoku University	マイクロ・コイルとマイクロ磁気デバイス
No. 11	2000/6/28	Shanfui Fan	Masachusetts Institute of Technology	Photonic Crystal
No. 12	2000/9/1	Yoshinobu Fukumori	Kobe Gakuin University	中性子による核反応を利用する癌治療法
No. 13	2000/11/9	Alfred Ludwig	Center of Advanced European Studies and Research	Magnetostrictive multilayers for actuator and sensor applications
No. 13	2000/11/9	Eckhard Quandt	Center of Advanced European Studies and Research	Magnetostrictive multilayers for actuator and sensor applications
No. 14	2000/12/8	Takao Suzuki	Toyota Technological Institute	磁性薄膜の磁気特性と磁気記録および光磁気記録への応用
No. 15	2000/12/22	Yotaro Yamazaki	Tokyo Institute of Technology	ガーネット微粒子分散型磁気光学媒体の開発—研究にはガッツが必要—
No. 16	2001/2/1	Kouichiro Inomata	Tohoku University	MRAMの開発動向と将来
No. 17	2001/10/28	Masaaki Tanaka	Tokyo University	スピン機能半導体材料の新展開と光・電子デバイスへの応用—半導体スピントロニクス—
No. 18	2002/3/7	Toshitaka Fujii	Aichi University of Technology	新しい磁気工学をめざして
No. 19	2002/3/11	Shin Yabukami	Tohoku University	超高周波磁気計測と応用
No. 20	2002/6/5	Oleg A. Aktsipetrov	Moscow State University	Introduction in Nonlinear Optics
No. 21	2002/6/12	Masaaki Takezawa	Kyushu Institute of Technology	高周波キャリア型薄膜磁界センサの小形・高感度化
No. 22	2002/7/19	Mikhail F. Limonov	Ioffe Physical-Technical Institute	Is it possible to see a photonic gap with unaided eye ?
No. 23	2002/7/25	Katsuaki Sato	Tokyo University of Agriculture and Technology	磁気光学研究の最近の展開
No. 24	2002/9/30	Masaki Nakano	Nagasaki University	希土類系磁石材料の作製(ナノ結晶バルク磁石・厚膜磁石)
No. 25	2002/10/7	Lambertus Hesselink	Stanford University	Nano-photonics for optical data storage and bio-engineering
No. 26	2002/10/16	Yasushi Takemura	Yokohama National University	原子間力顕微鏡を用いたナノソグラフィとその応用
No. 27	2002/10/24	Alexander V. Baryshev	Ioffe Physical-Technical Institute	Photonic band structure of artificial opals
No. 28	2003/1/28	Hiroyuki Akinaga	National Institute of Advanced Industrial Science and Technology	強磁性体/半導体接合を用いたスピン注入の実証とその高効率化
No. 29	2003/1/31	Takeshi Honda	Kyushu Institute of Technology	外部磁界を利用したマイクロマシンのワイヤレス駆動 ~ 体内埋込用マイクロポンプからアミューズメントマシンまで ~
No. 30	2003/3/4	Alexey P. Vinogradov	Institute for Theoretical and Applied Electrodynamics	Band theory of light localization in 1D systems
No. 31	2003/3/14	Galina P. Petrova	Moscow State University	Laser Light Scattering in Diagnostic of Widespread Diseases
No. 32	2003/9/5	Migaku Takahashi	Tohoku University New Industry Creation Hatchery Center	次世代高密度磁気記録デバイス実現のためのプロセス設計とナノ構造制御
No. 33	2004/7/17	Jun Kyokane	National Institute of Technology, Nara College	分子エレクトロニクスデバイスの開発と応用
No. 34	2004/11/26	Manabu Gomi	Nagoya Institute of Technology	強磁性強誘電性共存材料の創製と電圧による磁性制御
No. 35	2004/12/6	X. S. Zhao	National University of Singapore	Fabrication of 3D photonic crystals with self-assembled colloidal crystal as the template
No. 36	2005/2/7	Sang-Ho Lim	Korea University	高密度MRAMのビット書込みの諸問題
No. 37	2005/3/9	Masaaki Yagi	Sojo University	アモルファス磁性粉末とその成形成心の開発から工業化まで
No. 38	2005/3/4	Leonhard M. Reindl	University of Freiburg	Unwired SAW Sensor Systems
No. 39	2005/3/14	Katsuji Nakagawa	Nihon University	光磁気記録技術と光と磁気のハイブリッド記録
No. 40	2005/3/6	Eli Yablonovitch	University California, Los Angeles	Silicon Integrated Nano-Photonics as a Commercial Technology
No. 40	2005/3/6	Hironaga Uchida	Toyohashi University of Technology	Past, Present and Future of Magnetophotonic Crystals

Invited speakers for the past seminars

	Date	Name	Affiliation	Title
No. 40	2005/3/6	Alexander V. Baryshev	Toyohashi University of Technology	Coupling of Polarized Light to Three-Dimensional Photonic and Magnetophotonic Crystals
No. 40	2005/3/6	Alexey P. Vinogradov	Institute for Theoretical and Applied Electrodynamics	Photonic Crystals, Metamaterials, Negative Refraction and so on
No. 40	2005/3/6	Alexander B. Khanikaev	Toyohashi University of Technology	Theory and Numerical Simulation of Magnetophotonic Crystals
No. 40	2005/3/6	Alexander B. Granovsky	Moscow State University	Magneto-refractive Effect in Thin Films and Magnetophotonic Crystals
No. 40	2005/3/6	Oleg A. Aktsipetrov	Moscow State University	Nonlinear Magneto-Optics in Magnetophotonic Crystals
No. 41	2005/6/17	Hiroya Abe	Osaka University	ナノ粒子ボンディング技術による粒子・材料の構造制御
No. 42	2006/6/20	Stuart Yin	The Pennsylvania State University	Innovative fiber grating devices and their applications to reconfigurable communications and harsh environment sensing
No. 43	2006/9/28	Geunbae Lim	Pohang University of Science and Technology	Pohang科学技術大学におけるナノバイオ工学の最新研究動向
No. 44	2006/11/6	Kashiko Kodate	Japan Women's University	ホログラフィック光データベースによる超高速画像相関演算
No. 44	2006/11/6	Shigeki Nakauchi	Toyohashi University of Technology	視覚科学と技術:光を通じて世界とつながる人間
No. 45	2006/10/25	Yukitoshi Tsunoda	National Institute of Technology, Ibaraki College	最近の工業高等専門学校教育
No. 46	2007/3/5	Tomiki Ikeda	Tokyo Institute of Technology	協同現象を利用した光機能材料の創出
No. 46	2007/3/5	Atsunori Matsuda	Toyohashi University of Technology	ゾルーゲルハイブリッド材料と光学素子のためのマイクロパターンニング
No. 47	2007/3/8	Keiji Isamoto	santec	ベンチャー企業でのMEMS製品開発～産学共同のビジネスモデルとして～
No. 48	2007/7/4	Mark Tuominen	University of Massachusetts Amherst	New Approaches to the Fabrication and Physics of Nanomagnets
No. 49	2007/7/20	Masatoshi Ishikawa	Tokyo University	超並列ビジョンチップとその2次元並列読み出しへの応用
No. 49	2007/7/20	Mitsuo Fukuda	Toyohashi University of Technology	通信用半導体レーザ技術とナノフォトニクスへの応用
No. 49	2007/7/20	Akihiro Wakahara	Toyohashi University of Technology	光電子集積回路—シリコンフォトニクスから光電子融合システムへ—
No. 50	2007/9/3	Yasuhiro Takaki	Tokyo University of Agriculture and Technology	3次元立体映像表示装置の最新動向と将来展望—高密度指向性画像を用いた超多眼方式による3次元立体映像表示装置
No. 50	2007/9/3	Hideyoshi Horimai	Optware Co., Ltd.	これでわかったコリニアホログラフィー—コリニア方式の基本原理からHVDドライブシステムまで—
No. 51	2007/11/15	Hiroshi Yoshikawa	Nihon University	ホログラフィックビデオディスプレイへの挑戦
No. 51	2007/11/15	Hideo Sekino	Toyohashi University of Technology	マイクロ及びマクロ信号のウェーブレット解析
No. 52	2007/11/21	Koki Takanashi	Tohoku University	金属ナノ構造におけるスピン流の創出と制御
No. 53	2007/12/5	Alexander M Grishin	Royal Institute of Technology	1. New Magneto-Optical Garnets 2. Frontiers in Oxide Photonics and Electronics
No. 54	2008/1/17	Toshihiro Kubota	Kyoto Institute of Technology	これでわかったホログラフィー—ホログラフィーの基本原理から応用まで—
No. 55	2008/3/7	Masahiro Yamaguchi	Tohoku University	RF帯における薄膜透磁率計測技術とその高周波マイクロ磁気デバイスへの応用
No. 56	2008/3/19	Yoshiki Ichioka	Osaka University	「フォトニクス情報システム」—これまで、いま、これから—
No. 56	2008/3/19	Yuzo Furukawa	Toyohashi University of Technology	モノリシック光・電子集積回路の基盤技術
No. 57	2008/5/13	Kenjiro Watanabe	Toyohashi University of Technology	ブルー・コリニアホログラム記録技術の展望
No. 58	2008/7/1	Satoshi Sugimoto	Tohoku University	高性能永久磁石の基礎と応用—物性ならびに組織制御による磁気特性の向上—
No. 59	2008/7/22	Katsuhisa Tanaka	Kyoto University	新しい酸化物磁性薄膜の合成と物性
No. 60	2008/7/23	Shigeru Masuyama	Toyohashi University of Technology	「情報洪水を宝の山へ」—テキストマイニングの挑戦—
No. 61	2008/9/25	Hiroshi Sakurai	Asahi Glass Co.	ホログラフィック・ストレージ用リライタブル記録材料の開発
No. 61	2008/9/25	Masanobu Izaki	Toyohashi University of Technology	太陽電池における最近の動向
No. 62	2008/11/28	Yoshitaka Tsurukawa	Optware Co., Ltd.	Collinear-Holographic Multi-Dimensional Printer System “CDP-1”
No. 63	2008/12/8	Yung-Chun Lee	National Cheng Kung University	Roller-Based Nanoimprinting and Contact Printing Lithography for Fabricating Micro/Nano-Structures
No. 64	2009/1/16	Michiteru Kitazaki	Toyohashi University of Technology	神経デコーディングと脳機械インタフェース
No. 64	2009/1/16	Yoshiaki Tadokoro	Toyohashi University of Technology	音痴の無謀な挑戦
No. 65	2009/3/5	Shujiro Kawakami	Tohoku University	フォトニック結晶チップとその応用技術について
No. 65	2009/3/5	Hironaga Uchida	Toyohashi University of Technology	走査プローブ顕微鏡による原子およびナノスケール観察と微細加工
No. 66	2009/6/2	Nobuyuki Hashimoto	Citizen Holdings	液晶アクティブ光学素子とその光メモリへの応用
No. 67	2009/8/31	Masaaki Itakura	Kyoto University	超短パルスレーザーによる材料プロセスとホログラムを用いた三次元光デバイス高効率製造システム

Invited speakers for the past seminars

	Date	Name	Affiliation	Title
No. 67	2009/9/24	Tomoyoshi Ito	Chiba University	ホログラフィ計算の高速化と3次元テレビおよび可視化技術への応用
No. 68	2009/11/20	Yoshimasa Kawata	Shizuoka University	多層光メモリのためのコンパクトフェムト秒ファイバーレーザーの開発
No. 69	2009/12/16	Satoshi Okamoto	Tohoku University	マイクロ波アシストにおける磁化反転シミュレーションとスピンドYNAMICS
No. 70	2010/1/25	Alexander M Grishin	Royal Institute of Technology	Heteroepitaxial all-garnet magnetophotonic crystals:Towards magneto-optic lasing media
No. 71	2010/1/28	Junichiro Kawahara	National Institute of Advanced Industrial Science and Technology	メタ注意を測る
No. 72	2010/2/4	Mitsugu Sato	Hitachi High-Technologies Corporation	これで分かった電子ビームテクノロジー「高分解能SEM」
No. 72	2010/2/4	Tsuyoshi Onishi	Hitachi High-Technologies Corporation	これで分かった電子ビームテクノロジー「FIB」
No. 73	2010/3/7	Hiroto Fukunaga	Nagasaki University	アモルファス磁性金属形成の過去と現在そして未来
No. 73	2010/3/7	Jiro Yamasaki	Kyushu Institute of Technology	偏光顕微鏡を用いた磁性酸化物磁区観察の留意点
No. 73	2010/3/7	Masaki Nakano	Nagasaki University	厚膜磁石の開発
No. 73	2010/3/7	Masaaki Takezawa	Kyushu Institute of Technology	紫外光を用いたNd-Fe-B 系微結晶粒磁石の高分解能磁区観察
No. 73	2010/3/7	Masaaki Yagi	Sojo University	アモルファス軟磁性粉末とその形成磁心の量産実用化 一研究開発の開始から10 余年の歳月を経てー
No. 74	2010/5/19	Masao Miyake	Kyoto University	干渉リソグラフィと電析法を利用した三次元フォトニック結晶の作製
No. 75	2010/6/28	Kazushi Ishiyama	Tohoku University	磁気アクチュエータを利用した次世代医療機器の開発
No. 76	2010/7/16	Jauyn Grace Lin	National Taiwan University	Fabrication and characterization of YBCO and related perovskite thin films
No. 77	2010/10/14	Shin Saito	Tohoku University	垂直磁気記録HD媒体のための層状不整擬似六方晶材料の開発
No. 78	2011/10/17	Thierry Pauporte	Centre National de la Recherche Scientifique	Electrochemical preparation of nano-structured oxide semiconductor films
No. 79	2011/10/21	Vadym Zayets	National Institute of Advanced Industrial Science and Technology	Magneto-Optic and Spin-Photon Devices
No. 80	2011/11/8	Katsuhisa Tanaka	Kyoto University	Eu ²⁺ を含む準安定酸化物薄膜に見られる強磁性
No. 81	2011/12/9	Yasuhiro Takaki	Tokyo University of Agriculture and Technology	これで分かった立体表示, 第2弾!
No. 82	2012/3/27	Hiro Munekata	Tokyo Institute of Technology	スピノフォニクス
No. 83	2012/4/20	Hiroharu Kawasaki	National Institute of Technology, Sasebo College	プラズマプロセスを用いた薄膜の作製とその制御法に関する研究
No. 84	2012/7/18	Caroline A. Ross	Massachusetts Institute of Technology	Magnetic oxide films for integrated magneto-optical isolators
No. 85	2012/10/6	Alexander B. Granovsky	Moscow State University	Magnetic, magnetotransport and magnetocaloric properties of quaternary Ni-Mn-In-Z Heusler alloys
No. 85	2012/10/6	Arcady P. Zhukov	University of the Basque Country and IkerBasque	Magnetic properties and applications of soft magnetic microwires
No. 86	2012/11/19	Satoshi Tomita	Nara Institute of Science and Technology	カイラルメタ分子からカイラルメタ界面へ
No. 87	2013/5/28	Koji Sekiguchi	Keio University	ビヨンドCMOS-マグノニクスの創成シリーズ1「スピン分極電流によって誘起されるスピンドYNAMICS」
No. 88	2013/10/29	Mitsumasa Iwamoto	Tokyo Institute of Technology	光第2次高調波法による有機材料内のキャリア輸送の直接観測
No. 89	2014/5/1	Hiroshi Yoshikawa	Nihon University	3次元表示のための計算機合成ホログラム
No. 90	2014/11/11	Yoshinobu Honkura	magnedesign corporation	ビッグデータ時代の超高感度マイクロ磁気センサ MIセンサの開発の現状と将来展望
No. 91	2014/11/14	Masaki Nakano	Nagasaki University	永久磁石膜の開発の歴史と現状
No. 92	2015/1/21	Alexander B. Granovsky	Moscow State University	Introduction to the modern problems of magnetism: message to young scientists
No. 93	2015/2/6	Takeshi Kato	Nagoya University	イオン照射による磁性薄膜ナノパターンニング
No. 94	2015/2/27	Takayuki Ishibashi	Nagaoka University of Technology	有機金属分解法による磁性ガーネット薄膜の作製と応用
No. 95	2015/3/27	Satoshi Hirose	National Institute for Materials Science	新磁石開発への元素戦略的研究課題
No. 95	2015/3/27	Satoshi Okamoto	Tohoku University	永久磁石の保磁力問題とその解明への取り組み
No. 95	2015/3/27	Kazuhiro Hono	National Institute for Materials Science	自動車応用を目指した省希少元素高保磁力ネオジム基永久磁石の開発
No. 96	2015/5/12	Sho Muroga	Toyota National College of Technology	磁性薄膜を用いたオンチップ電磁ノイズ抑制体に関する研究
No. 97	2015/7/27	Eriko Watanabe	University of Electro-Communications	高精度位相制御による新しい光情報処理システムと応用
No. 98	2015/8/25	Shigeki Nakagawa	Tokyo Institute of Technology	スピントロニクス用磁性膜の磁気異方性制御技術
No. 99	2015/10/2	Noriaki Tsurumachi	Kagawa University	1次元フォトニック結晶における非線形共振器量子電磁力学
No. 99	2015/10/2	Kenzo Yamaguchi	Kagawa University	NEMS技術を利用したメカニカルプラズモニクス

Achievements of the Spin Electronics Group

Publication List (Last 5 years)

- Kazuki Nakamura, Hiroyuki Takagi, Taichi Goto, Pang Boey Lim, H. Horimai, H. Yoshikawa, V. M. Bove and Mitsuteru Inoue, "Improvement of diffraction efficiency of three-dimensional magneto-optic spatial light modulator with magnetophotonic crystal", *Appl. Phys. Lett.*, **108**, 2, 022404 (2016)
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Member of Host Laboratory

Hironaga Uchida



Yuichi Nakamura



Lim Pang Boey



Hiroyuki Takagi



Taichi Goto



Yumiko Yamamoto



Contact Information

Toyohashi University of Technology,
1-1 Hibari-Ga-Oka, Tempaku, Toyohashi, Aichi 441-8580, Japan,
TEL/FAX: +81.532.47.0120
E-mail: goto@ee.tut.ac.jp