出席第三屆 ASI 會議報告
(Advanced Science Institute)

會議期間
九十三年七月二十六日至三十一日

報告人　江雪嬌
行政院國家科學委員會國際合作處

九十三年十月二十日

系統識別號:C09303007

公 務 出 國 報 告 提 要

頁數: 20　含附件: 是

報告名稱:

出席在日本仙台舉行之第三屆尖端科學研習營及Ad Hoc Meeting 會資料

主辦機關:

行政院國家科學委員會

聯絡人／電話:

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出國人員:

江雪嬌　行政院國家科學委員會　國合處　副處長

出國類別: 其他

出國地區: 日本

出國期間: 民國 93 年 07 月 26 日 -民國 93 年 07 月 31 日

報告日期: 民國 93 年 10 月 15 日

分類號/目: I0／綜合（科學類）　I0／綜合（科學類）

關鍵詞: 尖端材料科技,JSPS,NSF

內容摘要: 1.有關Ad Hoc meeting之名稱定爲Asia-Pacific Steering Committee,ASI，每年舉行一次，以討論研討會之主辦國以及相關事宜。 2.ASI的機構確定爲七個國家(美、日、台、韓、中、澳、加)，八個贊助機構(美NSF、日JSPS、台NSC、韓KOSEF、中CAS與NSFC、澳ARC、加NRC)，基本上，以每年一個贊助機構爲主辦單位，如果中國願意兩個機構一同主辦亦可。此外，每次參加ASI研討會的名額以六個人爲限。參加者之資格以獲得博士後五年內爲原則。 3.2006年ASI將由加國NRC主辦，題目暫定爲Nanomedicine，2005 ASI 目前尚未有國家提出，如有任何國家有意願，則請於今年九月底前提出構想。 4.爲增加年輕研究人員的學習機會，未來的ASI研討會應適度減少演講者的人數，而提高年輕學子參加的名額。 5.此外。舉辦ASI研討會的時間，原則上以夏季七月、八月較適宜，因爲暑假期間，演講者比較有空可以與會。

本文電子檔已上傳至出國報告資訊網

出席第三屆 ASI(Advanced Science Institute)會議報告

會議期間：九十三年七月二十六日至三十一日

報告人：行政院國家科學委員會國際合作處副處長　江雪嬌

內容：

一、ASI(Advanced Science Institute) program 係由美國 NSF 發起的學術研討會，主要著眼於結合東太平洋國家之專業研究人員的聯繫與互動，透過國際科技合作的方式，建立國際網絡。除了舉辦研討會外，為加強推動亞洲地區科技合作，以任務編組方式成立亞洲區域合作網(Ad Hoc Scientific Cooperation Network)，旨在交換推動國際科技合作工作經驗，促進未來區域合作。第一屆 ASI 由日本 JSPS 主辦，主題為智慧型機器人的新發展(New Frontiers of Intelligent Robotics)，我國補助六位研究人員參加。第二屆由澳洲 ARC 主辦，主題為基因體與表現體之關聯 (The Genome-Phenome Link)，我國補助四位研究人員參加。第三屆由日本 JSPS 主辦(如附件一)，主題訂為功能性材料的新發展(New Frontiers of Functional Materials)，原訂於 2003 年舉辦，因受 SARS 疫情影響延至今年辦理。我國補助三位研究人員參加。

二、會議期間的課程研討 (如附件二)，主要分為白天與晚上，白天的課程(8AM-6PM)係由日本 JSPS 與東北大學邀請世界各國在尖端材

料領域之專家學者講授其研究內容與成果（講授者資料如附計三），晚上(7:30PM-9PM)則由參加的研究人員發表研究心得(研究人員資料如附件四)。參加者計有學者專家 19 人，研究人員 30 人，總計 49 人，在主題的範圍內，每天均有特定的研討題目，對於討論內容相當集中，且時間相當充裕，參加者可以隨時表達意見或討論。

二、Ad Hoc meeting 係各國補助單位為共同討論亞洲地區科技政策與建立聯繫網絡所召開之會議，依據前二次的作法，均在 ASI 研討會舉辦期間召開，本次亦不例外。主席為日本 JSPS 國際處處長 Yuko Furukawa，出席人員包括:日本 JSPS 監事 Hirochika Inoue、澳洲 ARC 國際合作處處長 Helen Cooper、加拿大駐日科技領事 Elizabeth Theriault、韓國 KOSEF 國際處處長 Byung-Whan Ho、中國 CAS 國際合作處官員 Weiping Chen、美國 NSF 東京辦事處處長 Christopher A. Loretz 以及我國 NSC 國際合作處副處長江雪嬌。會議討論議題包括：1. ASI 的架構，如 Fast-Asian 與 Pacific 之定義、架構下之組織、ASI 的目的。2. ASI 的運作準則，如舉辦頻率、下次主辦機構、議題選擇、會議主席與負責接待的機構之篩選原則、參加會議人員之篩選作業程序等。

會議結論摘要如下（詳細資料如附件五）：

1. 有關 Ad Hoc meeting 之名稱定為 Asia-Pacific Steering

Committee,ASI，每年舉行一次，以討論研討會之主辦國以及相關事宜。

2. ASI 的機構確定為七個國家(美、日、台、韓、中、澳、加)，八個贊助機構(美 NSF、日 JSPS、台 NSC、韓 KOSEF、中 CAS 與 NSFC、澳 ARC、加 NRC)，基本上，以每年一個贊助機構為主辦單位，如果中國願意兩個機構一同主辦亦可。此外，每次參加 ASI 研討會的名額以六個人為限。參加者之資格以獲得博士後五年內為原則。
3. 2006 年 ASI 將由加國 NRC 主辦，題目暫定為 Nanomedicine，2005 ASI 目前尚未有國家提出，如有任何國家有意願，則請於今年九月底前提出構想。
4. 為增加年輕研究人員的學習機會，未來的 ASI 研討會應適度減少演講者的人數，而提高年輕學子參加的名額。
5. 此外。舉辦 ASI 研討會的時間，原則上以夏季七月、八月較適宜，因為暑假期間，演講者比較有空可以與會。

附記

1. 本次 ASI 的講義或相關資料，均不用機構名稱，意即今年主辦的 JSPS 之頭銜不在任何文件顯示，據 Yoko 表示，因為中國非常堅持不可用國名，否則不派員參加，因此，JSPS 妥協了。
2. 本次 ASI 研討會係由 JSPS 主辦，共計花費 22 萬美金（包含演講

者機票、酬勞、當地食宿與參加者當地食宿）。

3. 有關我國擬舉辦下次 ASI，經私下與日本 Yoko 及中國的代表 Chen 討論，渠均表示，如果用 NSC 的名稱則會引起中國抗議，同時，預料該國將不會派人參加。

4. 此外，自 7 月 26 日至 31 日期間進行密集研討會，主題為尖端材料，總計有 19 位具有學術地位的卓越演講者，以及 30 位來自各國的年輕學者參加，會中，除了由演講者進行專題講授外，亦由年輕學者發表其研究成果，並進行雙向溝通，對於知識交流與未來的網絡建立應具有相當的幫助。

The third Advanced Science Institute

NEW FRONTIERS OF FUNCTIONAL MATERIALS

July 26 – 31, 2004

Sendai, Japan

JSPS, Tohoku University

(as of May 14, 2004)

"New Frontiers of Functional Materials"

The seminar **New Frontiers of Functional Materials** is organized by Japan Society for the Promotion of Science in cooperation with Tohoku University in order to provide an opportunity for discussion of recent developments in various fields of Materials Science and to promote international collaboration and cooperation in innovative research on advanced materials. The seminar is going to be held in Miyagi-Zao Royal Hotel from July 26 through 31 2004. The academic coordinator for the seminar is Prof. Akihisa INOUE, Director of the Institute for Materials Research, Tohoku University.

The program focuses on key issues associated with the science and technology of Advanced Functional Materials. Among the fields to be addressed are magnetic and electronic memory storage materials. Nanomaterials is currently one of the most dynamically developing fields of Materials Science. Nanostructured materials is a relatively new field that features various type of prospective substances demonstrating a wide range of superior properties. Among them are materials with exclusively high mechanical, enhanced magnetic, electronic and optical properties. Such properties have been made possible by a very small structure unit (grain, particle, layer) size ranging from 1 to 100 nm, which is much smaller than those obtained in conventional metallic materials or alloys.

Current topics of high interest, such as self assemblies, spin electronics, wave functional materials (photonic crystals, sonic crystals, and fractal photonics), advanced ferroelectric thin film structures, will be addressed in the seminar. These recently emerging topics show promise in becoming new field of physics and material science. All conventional electronic and electrical devices are driven by the motion of the charge emitted by electrons. However, another important characteristic of electrons is their angular momentum or spin, which has all but been ignored. This spin of the electron may form the basis of a new kind of electronics, 'spintronics,' which has the potential of being as revolutionary in the 21st century as conventional electronics was in the 20th.

List of Lecturers and Titles of Possible Talks

Prof. S. Seetharaman
Royal Institute of Technology, Stockholm, Sweden
"Challenges of Process Metallurgy Today"

Prof. Srinivasa Ranganathan
Indian Institute of Science, India
"Quasicrystalline Alloys"

Prof. Akihisa Inoue
Institute for Materials Research, Tohoku University, Japan
"Stabilization of Supercooled Metallic Liquid and Bulk Glassy Alloys"

Prof. Shuichi Miyazaki
Institute of Materials Science, University of Tsukuba, Japan
"Shape Memory Alloys"

Prof. Ramesh Ramamoorthy
University of California, Berkley, U.S.A.
"Oxides and Memories of the Future"

Prof. Sara Majetich
Carnegie Mellon University, PA, U.S.A.
"Magnetic Nanoparticle Arrays and Nanoparticle Crystals"

Prof. K.V. Rao
Royal Institute of Technology, Stockholm, Sweden
"Imaging Small Structures and Novel Functional Materials by Ink-jet Printing"

Dr. R.D.Shull
National Institute of Standards and Technology, MD, U.S.A.
"Advances in Magnetic Materials"

Prof. Terunobu Miyazaki
Graduate School of Engineering, Tohoku University, Japan
"Spin-electronics and Related Materials"

The third Advanced Science Institute

Dr. Mark. B. Johnson
Naval Research Laboratory, DC, U.S.A.
"Spintronics"

Prof. Ping Sheng
Inst. of Nanoscience and Technology, HKUST, Hong Kong, China
"Photonic Crystals, Sonic Crystals, and Fractal Photonics"

Dr. Urs Hafeli
The Cleveland Clinic Foundation, OH, U.S.A.
"Materials in Biotechnology"

Associate Prof. Tim St. Pierre
The University of Western Australia, Australia
"Magnetic Nanoparticles in Medical"

Dr. Olivier Fruchart
Louis Néel Laboratory, CNRS, Grenoble, France
"Layered Structures and Self Assemblies"

Prof. Mostafa El-Sayed
Georgia Institute of Technology, GA, U.S.A.
"Laser Processing of Advanced Materials"

Prof. Heinrich Hofmann
Laboratory of Power Technology, EPFL, Lausanne, Switzerland
"Chemical Synthesis and Processing of Nanoparticles"

Prof. Sumio Iijima
Faculty of Science and Technology, Meijo University, Japan
"Carbon Nanotubes"

Prof. Rudiger Bormann
Technical University Hamburg-harburg, Hamburg, Germany
"Hydrogen Storage Materials"

Prof. Yoshiyuki Kawazoe
Institute for Materials Research, Tohoku University, Japan
"Computing Materials Science"

The Third ASI Presentations by Participants

JSPS
2004/7/21

	Name	Title
Monday 16:00~	Dr. Byung Soo Lee	Dielectric properties of PbTiO3/PbZrO3 multilayered thin films prepared by RF Magnetron sputtering
	Dr. Xu Lihua	A CHALLENGE TO GLOBAL ERRATIC CLIMATE BY GREEN MATERIALS
	Dr Huaijin Zhang	GROWTH OF Nd:GdVO4 CRYSTAL FOR HIGH EFFICIENCY 1.34 μm LASER OUTPUT
	Dr. Robert Moon	Fracture of Functionally Graded Interfaces
	Dr. Ernult Franck	Epitaxially grown nanoparticles and spin-dependent single electron tunneling
	Dr Zhang Huali	Internal friction of La2NiO4+d system
Tuesday 19:30~	Dr. Kuiying Chen	A Materials Informatics Approach Towards Rational Design of Novel Materials and Coating
	Dr. Wen-Wei Wu	IN-SITU TEM OBERVATION OF DYNAMICAL CHANGES OF NiSi2 NANOPARTICLES ON SILICON
	Dr. Xiaoping Wang	Different Tip-Shapes ZnO Nanorods and their Properties
	Dr. Tomonobu Owa	NiAl-ALLOY DEPOSIT PRODUCED BY PTA SURFACING PROCESS AND ITS OXIDATION BEHAVIOR
	Dr Julie Cairney	MECHANICAL BEHAVIOUR AND THE ROLE OF MICROSTRUCTURE IN CONTACT LOADING OF TiN COATINGS
	Dr. Lishan Cui	SELF-TENSION OF MARTENSITE DURING CONSTRAINED TRANSFORMATION
Wednesday 19:30~	Dr KiRyong Ha	Incorporation of Perfluorinated Moiety to Alignment Materials and their Effects on the Liquid Crystal Orientations
	Dr. Maria Hrmova	CATALYSIS IN GLYCOSIDE HYDROLASES: A LAUE CRYSTALLOGRAPHIC APPROACH
	Dr. Manabu Nakazono	Strong Chemiluminescenct Molecules
	Dr. Bao-Ping Zhang	CATALYST-FREE LOW-TEMPERATURE GROWTH OF ZnO NANOSTRUCTURES
	Dr. Kenji Kondo	THE QUASI-PARTICLE ENERGY SPECTRUM OF ELECTRON GAS IN QUANTUM STRUCTURES
	Dr. SoShu Kirihra	CONFINEMENT OF ELECTROMAGNETIC WAVE IN PHOTONIC FRACTALS WITH MENGER SPONGE STRUCTURE
Friday 19:30~	Dr Bock Cristina	Bi-metallic Pt/Ru systems for fuel cell catalysts
	Dr. Chae-Ho Shin	Micropore Analysis using Argon Adsorption
	Dr. Aidi Zhao	Kondo effect in single cobalt phthalocyanine molecules on Au surface
	Dr. Hong Chun-yan	Synthesis and Characterization of Well-Defined Di-block Copolymers of Poly(N-isopropylacrylamide) and Poly(ethylene oxide)
	Dr. Yuezhen Bin	DEVELOPMENT OF HIGH-PERFORMANCE MATERIALS WITH POLYMER AND CARBON NANOTUBES COMPOSITES
	Dr. Song Xie	
Saturday 16:00~	Dr. Tien-Syh Yang	N-doped Titanium Oxide Films as Visible-Light Photocatalyst by Physical Vapor Deposition
	Dr. Jenn-Ming Song	Interesting Metallurgical Topics in Electronic Packaging Lead-free, Nano and Amorphous
	Dr Kuo Jer-Haur	THE DEVELOPMENT OF MATHEMATICAL MODELS FOR MATERIALS PROCESSING APPLICATIONS
	Dr. John Zhu	NOVEL INSIGHTS INTO THE EFFECTS OF DEFECTS OF THE CARBON NANOTUBES ON HYDROGEN STORAGE USING MOLECULAR DYNAMICAL SIMULATIONS
	Dr. Qunxiang Li	SIMULATED STM IMAGES OF METALLOFULLERENES
	Dr. Masaru Nakagawa	PHOTOREACTIVE MOLECULAR SURFACES SELECTIVELY TETHERING NANOMATERIALS

The Third ASI Session Chair

JSPS
2004/7/29

		Session Chair	Lecturer	Title
Monday, 26	Opening Remarks	Prof. A. Inoue	Prof. A. Inoue	
	Morning Lecture 1	Prof. A. Inoue	Prof. S. Seetharaman	Challenges of Process Metallurgy Today
	Morning Lecture 2		Prof. S. Ranganathan	Quasicrystalline Alloys
	Daytime Lecture,	Prof. S. Ranganathan	Prof. A. Inoue	Stabilization of Supercooled Metallic Liquid and Bulk Glassy Alloys
	Evening Lecture		Presentation by participants	
Tuesday,27	Morning Lecture 1	Prof. S. Seetharaman	Prof. S. Miyazaki	Shape Memory Alloys
	Morning Lecture 2	Prof. K.V. Rao	Prof. R. Ramamoorthy	Oxides and Memories of the Future
	Daytime Lecture,	Prof. R. Ramamoorthy	Prof. S. Majetich	Magnetic Nanoparticle Arrays and Nanoparticle Crystals
	Evening Lecture	Dr. R.D. Shull	Prof. K.V. Rao	Imaging Small Structures and Novel Functional Materials by Ink-jet Printing
	Addtion (Presentation by participants)	Dr. R.D. Shull	Presentation by participants	
Wednesday, 28	Morning Lecture 1	Dr. M. Johnson	Dr. R.D. Shull	Advances in Magnetic Materials
	Morning Lecture 2		Prof. T. Miyazaki	Spin-electronics and Related Materials
	Daytime Lecture,	Dr. O. Fruchart	Dr. M. Johnson	Spintronics
	Evening Lecture		Prof. P. Sheng	Photonic Crystals, Sonic Crystals, and Fractal Photonics
	Addtion (Presentation by participants)	Dr. Urs Hafeli	Presentation by participants	
Thursday, 29	Morning Lecture 1	Prof. S. Majetich	Dr. Urs Hafeli	Materials Challenges in Biotechnology
	Morning Lecture 2	Prof. H. Hofmann	Prof. Tim St. Pierre	Magnetic Nanoparticles in Medical Applications
Friday, 30	Morning Lecture 1	Prof. P. V. Kamat	Dr. O. Fruchart	Layered Structures and Self Assemblies
	Morning Lecture 2	Prof. K.V.Rao	Prof. P. V. Kamat	Photo Induced Processes in Advanced Materials
	Daytime Lecture	Prof. R. Bormann	Prof. H. Hofmann	Chemical Synthesis and Processing of Nanoparticles
	Evening Lecture		Prof. Greer	Nanometre-Scale Nucleation and Phase Changes in Advanced Functional Materials
	Addition	Prof. Greer	Presentation by participants	
Friday, 31	Morning Lecture 1	Prof. P. Sheng	Dr. M. Yudasaka	Carbon Nanotubes
	Morning Lecture 2		Prof. R. Bormann	Hydrogen Storage Materials
	Daytime Lecture,	Prof. Tim St. Pierre	Prof. Y. Kawazoe	Computing Materials Science
	Evening Lecture		Presentation by participants	
	Closing Remarks	Prof. K.V. Rao	Prof. K.V. Rao	

The Third Advanced Science Institute

Program

Day	Topic	Events							
		Morning Lecture 1	Break	Morning Lecture 2	Lunch	Daytime Lecture	Break	Evening Lecture	Addition
Sunday, 25		Arrival							18^{00} Lecturers' Meeting 18^{30} Orientation 19^{00} Welcome Party
Monday, 26	Challenges in Metallurgy	7^{45} Opening remarks Prof. A. Inoue, 8^{00} Prof. S. Seetharaman, *"Challenges of Process Metallurgy Today"*	10^{00} - 10^{20}	10^{20} Prof. S. Ranganathan, *"Quasicrystalline Alloys"*	12^{20}-13^{45}	13^{45} Prof. A. Inoue, *"Stabilization of Supercooled Metallic Liquid and Bulk Glassy Alloys"*	15^{45}-16^{00}	16^{00} Presentation by participants	18^{00} Reception
Tuesday, 27	Memory and Printing Devices	8^{00} Prof. S. Miyazaki, *"Shape Memory Alloys"*	10^{00} - 10^{20}	10^{20}Prof. R. Ramamoorthy, *"Oxides and Memories of the Future"*	12^{20}-13^{45}	13^{45}Prof. S. Majetich, *"Magnetic Nanoparticle Arrays and Nanoparticle Crystals"*	15^{45}-16^{00}	16^{00} Prof. K.V. Rao, *"Imaging Small Structures and Novel Functional Materials by Ink-jet Printing"*	18^{00}Dinner 19^{30} Presentation by participants
Wednesday, 28	Electronic, Magnetic and Optical Materials	8^{00} Dr. R.D. Shull, *"Advances in Magnetic Materials"*	10^{00} - 10^{20}	10^{20} Prof. T. Miyazaki, *"Spin-electronics and Related Materials"*	12^{20}-13^{45}	13^{45} Dr. M. Johnson, *"Spintronics"*	15^{45}-16^{00}	16^{00} Prof. P. Sheng, *"Photonic Crystals, Sonic Crystals, and Fractal Photonics"*	18^{00}Dinner 19^{30} Presentation by participants
Thursday, 29	Biomaterials	8^{00} Dr. Urs Hafeli, *"Materials Challenges in Biotechnology"*	10^{00} - 10^{15}	10^{15} Assoc. Prof. Tim St. Pierre, *"Magnetic Nanoparticles in Medical Applications"*	12^{15} Excursion				
Friday, 30	Processing of Advanced Materials	8^{00} Dr. O. Fruchart, *"Layered Structures and Self Assemblies"*	10^{00} - 10^{20}	10^{20} Prof. P. V. Kamat, *"Photo Induced Processes in Advanced Materials"*	12^{20}-13^{45}	13^{45} Prof. H. Hofmann, *"Chemical Synthesis and Processing of Nanoparticles"*	15^{45}-16^{00}	16^{00} Prof.A.L.Greer, *"Nanometre-Scale Nucleation and Phase Changes in Advanced Functional Materials"*	18^{00}Dinner 19^{30} Presentation by participants
Saturday, 31	Advanced Materials and Computing Science	8^{00} Dr. M. Yudasaka *"Carbon Nanotubes"*	10^{00} - 10^{20}	10^{20} Prof. R. Bormann, *"Hydrogen Storage Materials"*	12^{20}-13^{45}	13^{45} Prof. Y. Kawazoe, *"Computing Materials Science"*	15^{45}-16^{00}	16^{00} Presentation by participants	18^{00} Closing remarks 19^{00} Farewell Party
Sunday,1		Departure							

List of ASI Participants

	Name	Institute	Agency
Lecturer	Oliver Fruchart	Centre National de la Recherche Scientifique	
	Seshadri Seetharaman	Royal Institute of Technology	
	Heinrich Hofmann	Ecole Polytechnic federal Lausanne	
	Mark Johnson	US Naval Research Laboratory	
	Ping Sheng	The Hong Kong University of Science and Technology	
	Tim St. Pierre	The University of Western Aunstralia	
	K. V. Rao	Royal Institute of Technology	
	Robert D. Shull	National Institute of Standard and Technology	
	Rudiger Bormann	Technical University Hamburg-Harburg	
	Srinivasa Ranganathan	Indian Institute of Science	
	Urs Hafeli	The Cleveland Clinic Foundation	
	Ramesh Ramamoorthy	University of California, Berkeley	
	Prashant Kamat	University of Notre Dame	
	Sara Majetich	Carnegie Mellon University	
	Akihisa Inoue	Tohoku University	
	Yoshiyuki Kawazoe	Tohoku University	
	Shuichi Miyazaki	Tsukuba University	
	Terunobu Miyazaki	Tohoku University	
Younger Participants	Kuiying Chen	National Research Council	NRC
	Christina Bock	Institute for Chemical Process and Environmental Technology	NRC
	Byung Soo Lee	Chonbuk National University	KOSEF
	Chae-Ho SHIN	Chungbuk National University	KOSEF
	KiRyong Ha	Keimyung University	KOSEF
	Tien-Syh Yang	National Dong Hwa University	NSC
	Jenn-Ming Song	National Cheng Kung University	NSC
	Jer-Haur KUO	National Cheng Kung University	NSC
	Wen-Wei Wu	National Tsing Hua University	NSC
	Lihua XU	University of Science and Technology Beijing	NSFC
	Lishan Cui	University of Petroleum	NSFC
	Huaijin ZHANG	Shandong University	NSFC
	John Zhu	Curtin University of Technology	ARC
	Maria Hrmova	The University of Adelaide	ARC
	Robert Moon	University of New South Wales	ARC
	Julie Marie Cairney	University of New South Wales	ARC
	Aidi Zhao	University of Science and Technology of China	CAS
	Chun-Yan Hong	University of Science and Technology of China	CAS
	Huali ZHANG	University of Science and Technology of China	CAS
	Song Xie	University of Science and Technology of China	CAS
	Xiaoping Wang	University of Science and Technology of China	CAS
	Qunxiang Li	University of Science and Technology of China	CAS
	Tomonobu Owa	Nagano Junior College of Technology	JSPS
	Manabu Nakazono	Kyushu University	JSPS
	Bao-ping Zhang	RIKEN	JSPS
	Kenji Kondoh	Hokkaido University	JSPS
	Soushu Kirihara	Osaka University	JSPS
	Masaru Nakagawa	Tokyo Institute of Technology	JSPS
	Yuezhen Bin	Nara Women's University	JSPS
	Franck ERNULT	Tohoku University	JSPS

Lecturer information for the third ASI

Name:

K. V. Rao

Position

Professor of Condensed Matter and Materials Physics

Institution

The Royal Institute of Technology

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Statement of current research activities and interests

Development of Magnetic Imaging techniques from nano to submicron scale.
Novel Magnetic Materials –Bulk and thin films
Ferroelectric materials –Thin films
Thin films and Multilayers and heterostructures, PLD, rf and dc Sputtering.
Magnetic amorphous materials, and Bulk Glassy materials
Doped ferromagnetic semiconductors ·Spintronic materials
Nanostructured Materials
Ink-jet printing of novel materials
SPM Techniques STM/AFM/MFM studies of novel materials

1st page of session materials

Imaging Small Structures and Novel Functional Materials by Ink-jet Printing

K.V. Rao

Dept of Materials Science, Royal Institute of Technology
Stockholm, Sweden

ABSTRACT

In this presentation I will touch upon three main areas related to studies of physical properties of novel systems at length scales ranging from nano to submicrons

1) Development of a method using AFM to image the magnetic response of a single magnetic dot in a patterned structured media.

2) Development of a method to measure, and image the local magnetic susceptibility at a sub-micron scale on a given surface. Studies of deformation induced ferromagnetism in nanostructured Fe-Al sheets will be given as an example of the capability of this instrument.

3) Development of Ink-jet technology to produce structures of novel materials

A brief Autobiography

- K.V. Rao, originally from India, after obtaining his D.Phil from the University of Oxford, at the Clarendon Laboratory returned to USA after a bried postdoctoral work at University of Dalhousie University, in Canada. In USA he has been involved in research at various Universities and Institutes. Before moving to Sweden Rao was a professor at the University of Illinois, Urbana and worked at 3M company in Minnesota in the Information Technology division. In Sweden Rao was appointed to the Chair of Condensed Matter Physics. at the Royal Institute of Technology. Recently he moved to the Dept. of Materials Science establishing a new program on technology based basic studies of physics of novel materials.

Lecturer Information

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8. Statement of current and planned research activities and interests

Photoinduced charge transfer processes in semiconductor, metal nanoparticles and control of charge transport in nanoassemblies . Design of nanostructure architectures for organic photovoltaics, sensors and environmental remediation. Planned research activities include design of nanostructured carbon catalysts (e.g., carbon nanotubes) for fuel cells.

MATERIAL CHALLENGES IN BIOTECHNOLOGY

Urs Häfeli

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Abstract: Materials Science and the "new" field of Nanotechnology provide an enormous number of possibilities for the engineering of better and smaller systems, not only for technological applications, but also for use in humans. Biomedical devices (implants) such as artificial limbs, pace makers, heart assist devices, intelligent drug delivery reservoirs, and even artificial organs, will revolutionize medicine, allow better and more individualized treatment, and lead to improvements in function and patient satisfaction previously unseen. Newly developed materials such as alloys, polymers, and inorganic substances, are now being made and patterned with increasingly refined know-how. For these materials, biocompatibility and toxicity testing is a crucial step before their clinical application in humans. This lecture will give some definitions, discuss important considerations for the testing of biomedical devices, and look at the steps that need to be performed before such devices are applied in humans. Test results from the toxicity testing of magnetic nano- and microspheres and from stents will be used to illustrate the testing procedures.

Biography: Since July 2004, Urs Häfeli has been an assistant professor in the Division of Pharmaceutics and Biopharmaceutics, Faculty of Pharmaceutical Sciences, at the University of British Columbia in Vancouver. He holds a degree in Pharmaceutics from the Federal Institute of Technology, Zürich, Switzerland and a Ph.D. in Radiopharmaceuticals from the same institution and the Paul Scherrer Institute in Würenlingen, Switzerland. Prof. Häfeli was a postdoctoral fellow at the Joint Center for Radiation Therapy at Harvard University, Boston, MA from 1991 to 1993 and has for the last 11 years worked as a staff scientist in the Radiation Oncology Department at the Cleveland Clinic Foundation, Cleveland, Ohio, U.S.A. His research interests include the use of therapeutic radioisotopes for cancer therapy and the application of magnetic microspheres for site-directed smart drug targeting. He is interested in all aspects of translational research necessary to bring a new pharmaceutical from the laboratory bench to a clinical trial. A very important aspect in this

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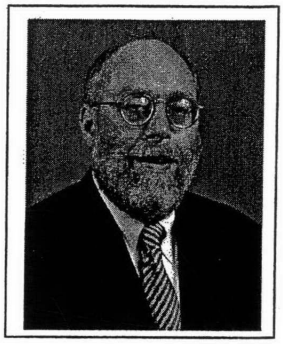
(8) Statement of current and/or planned research activities and interests:

[1] To search for a new glassy alloy system with high stability of supercooled liquid against crystallization and to clarify the mechanism for the stabilization of the supercooled liquid in special alloy components.

[2] To search for novel characteristics in mechanical, physical, magnetic and chemical aspects of bulk glassy and nanostructured alloys obtained by use of stabilization of supercooled liquid and to clarify the mechanism for the appearance of novel characteristics.

[3] To develop suitable production and forming processes of bulk glassy and nanostructured alloys and to find their application fields.

Lecturer information for the third ASI



(1) Name:
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(8) Statement of current and/or planned research activities and interests:

Magnetism, Magnetocaloric Effects, Magnetic Domain Imaging, Magnetostriction, GMR, Spin Density Waves

ADVANCES IN MAGNETIC MATERIALS

Dr. Robert D. Shull

National Institute of Standards and Technology, Gaithersburg, MD, USA

Abstract:

One of the major advances in materials in the past 20 years has been the development of processes capable of constructing materials with nanometer dimensions (e.g., grain size, particle diameters, layer thicknesses, rod diameters, separation distances between species, etc.). As a consequence of this high resolution and control in the preparation and analysis of materials, it has been possible to make many novel material structures (e.g., nanocrystalline and nanocomposite) and material combinations, resulting in new properties and property combinations. Magnetism is one of these properties which are affected by the new nanostructure. Here, a review will be presented of some of the property changes which have been observed and a description of some of the exciting applications envisioned for these materials. As a result of this review, it will be obvious what makes magnetic nanomaterials so special in the development scheme of next-generation materials and devices.

Biography:

Dr. Robert D. Shull is presently the Group Leader of the Magnetic Materials Group at NIST. He received a B.S. degree in Metallurgy and Materials Science from MIT in 1968, and both M.S. and Ph.D. degrees in Metallurgical Engineering in 1973 and 1976 respectively from the University of Illinois at Urbana-Champaign (UIUC). He was awarded a Postdoctoral Fellowship at CALTECH from 1976-1979, and then joined the National Bureau of Standards (NBS), now known as NIST, in 1979. Since joining NIST, he has pioneered the area of magnetic nanocomposite refrigerants, rapidly solidified the AlMn alloy in which "quasicrystals" were discovered, prepared the first laser-ablated High T_c superconductor, first explained the novel Aattractable levitation@ found in some high T_C materials, proved exchange-biased bilayers reverse their magnetic state asymmetrically, and discovered the first spin density wave in a ferromagnet. Dr. Shull has co-authored over 130 publications, edited 5 books, holds 3 patents, and presented over 200 invited talks. Dr. Shull is the Past Chairman of the International Committee on Nanostructured Materials and both initiated and helped write the National Nanotechnology Initiative (NNI) championed by President Clinton in year 2000. He is also the son of Dr. Clifford G. Shull, the winner of the 1994 NOBEL PRIZE in PHYSICS.

Lecturer information for the third ASI

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(8) Statement of current and/or planned research activities and interests:

Investigations of interfaces, quasicrystals, bulk metallic glasses and nanostructured materials with emphasis on synthesis, structure and stability; Applications of new geometries for novel materials; Materials informatics ; Archaeometallurgy of wootz steel and the Damascus Sword

QUASICRYSTALLINE ALLOYS

Srinivasa Ranganathan
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Abstract :

The discovery of quasicrystals in 1984 by D.Shechtman and coworkers has marked a paradigm shift in our understanding of the atomic configuration in the solid state. In quasicrystals an ordered arrangement of atoms occurs without concurrent periodicity in contrast to crystals. They have been the most intensely studied intermetallics over the past two decades. Several models have been advanced to describe their atomic arrangement and can be classified as Penrose tilings, coverings and cluster models. Quasicrystals can also be recovered by the projection of periodic structures from higher dimensions. The synthetic routes to quasicrystal forming systems are many. It is possible to prepare single large quasicrystals. At the other extreme nanoquasicrystals occur during devitrification of metallic glasses. The factors leading to the formation of quasicrystals will be discussed. The intriguing link of quasicrystals with crystals and glasses will be emphasized. The unusual mechanical and electronic properties of quasicrystals will be described. Their primary application as monolithic materials and constituents of composites will be pointed out.

Biography:

Professor S. Ranganathan was born on January 10, 1941 in Cuddalore. After an excellent academic career at the University of Madras and the Indian Institute of Science in 1962, he did his doctoral thesis in Cambridge University, England during 1962-1965. After a brief stint at the Lawrence Radiation Laboratory, Berkeley, USA he joined the faculty at the Banaras Hindu University in 1967 and rose to become a Professor in 1972. In 1981 he moved to the Indian Institute of Science as a Professor. He is currently Honorary Professor at the Indian Institute of Science and Visiting Professor at the National Institute of Advanced Studies. He also serves as a member of the International Advisory Committee of the Institute for Materials Research at Tohoku University, Japan.

Lecturer information for the 3rd ASI

Please attach your digital photo if you do not mind.

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(8) Statement of current and/or planned research activities and interests:

Research interests are microstructural kinetics, specifically on glass formation and crystal nucleation, specifically on bulk metallic glasses and on grain refinement. Other interests are diffusion and interface reactions in multilayered thin films, chalcogenides for phase-change data storage, electromigration in thin-film conductors, and carbohydrate glasses for biopreservation.

NANOMETRE-SCALE NUCLEATION AND PHASE CHANGES IN ADVANCED FUNCTIONAL MATERIALS

A. L. Greer
University of Cambridge, Department of Materials Science & Metallurgy
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Abstract:
The kinetics of phase transformations are generally considered to be well understood, but much needs to be done to adapt and extend classical analyses to be relevant for nanometre-scale structures of current interest. New regimes of behaviour are reached in ultra-fine structures. In this presentation examples are selected to illustrate key length-scale effects. It is important to develop better understanding of these in order to optimize the structure, properties and reliability of nm-scale materials and devices. It is also of interest to examine how living systems have evolved mechanisms for controlling and exploiting phase transformations on fine length scales.

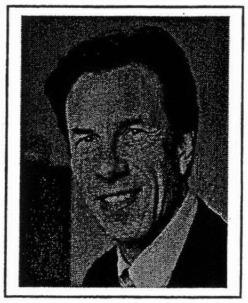
Biography:

A. Lindsay Greer is Professor of Materials Science and Deputy Head of the Department of Materials Science & Metallurgy in the University of Cambridge. After undergraduate studies and then a PhD degree at Cambridge (1979) on transformations in metallic glasses, he undertook postdoctoral work and was an Assistant Professor of Applied Physics in the Division of Applied Sciences at Harvard University (1980-1984) before returning to a faculty position in Cambridge. He has also been Invited Professor at the Institut National Polytechnique de Grenoble, and Visiting Scientist at the Centre d'Études Nucléaires de Grenoble, France (1994). Greer is editor of *Philosophical Magazine* and is chair of the Editorial Board of *MRS Bulletin*. In Cambridge, he is also Vice Master of Sidney Sussex College.

Greer's research interests are in microstructural kinetics, specifically on glass formation and crystal nucleation, specifically on bulk metallic glasses and on grain refinement. Other interests are diffusion and interface reactions in multilayered thin films, chalcogenides for phase-change data storage, electromigration in thin-film conductors, and carbohydrate glasses for biopreservation. He has edited 8 proceedings, and authored or co-authored 8 book chapters and approximately 280 papers.

Prizes and Awards — 1981, Goldsmiths' Research Fellowship (Churchill College, Cambridge, UK); 1983, IBM Faculty Development Award; 1989, W. H. Zachariasen Award of the *Journal of Non-Crystalline Solids*; 1998, Light Metals Award of TMS (USA); 1999, Cast Shop Technology Award of TMS (USA); 2000, Cook-Ablett Award of the Institute of Materials (UK); 2000, Pilkington Teaching Prize of the University of Cambridge; 2000, Senior Scientist Medal of the International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials; 2004, Honda Kotaro Memorial Medal of Tohoku University.

Lecturer information for the third ASI



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(8) Statement of current and/or planned research activities and interests:

- light-weight structural materials, hydrogen technology, wear resistant coatings. x-ray optics
- processing of novel materials under highly non-equilibrium conditions, powder technology, nanotechnology, surface and coating technology,
- nanostructured materials, metastable materials, metal-ceramic composites, intermetallic compounds,
- modelling of thermodynamics, thermodynamics of metastable phases, electrochemistry, kinetics of phase transformation

Hydrogen Storage Materials

M. Dornheim[1], T. Klassen[1], R. Bormann[1,2]

[1] Institute for Materials Research, GKSS Research Centre, Geesthacht, Germany

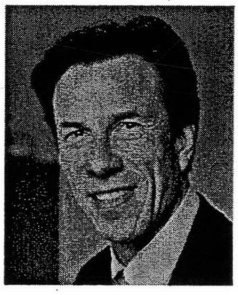
[2] Department of Materials Science and Technology,

Technical University Hamburg-Harburg, Hamburg, Germany

Abstract:

Hydrogen is the ideal means of storage, transport and conversion of energy for a comprehensive clean energy concept. Regarding the use of hydrogen as a fuel for the zero-emission vehicle, one major problem is storage of hydrogen. Metal hydrides offer a safe alternative to storage in compressed or liquid form. High volumetric storage densities as well as long-term stability are the advantages of this storage method. However, one major disadvantage of this hydrogen storage alternative has been the low gravimetric hydrogen storage capacity. Basic properties of metal hydrides as well as recent achievements concerning the increase of gravimetric storage capacity are presented.

Biography of Rüdiger Bormann



Current positions:

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Director of the Institute of Materials Research, GKSS Research Centre, Geesthacht, Germany

Education and Professional Employment

1979	Dr. rer. nat. (Metal Physics, Univ. Göttingen, Germany)
1981-82	Visiting Scientist, Dept. of Applied Physics, Stanford Univ., U.S.A.
1982-88	Assistant Professor, Univ. Göttingen
1988	Habilitation Univ. Göttingen, venia lengendi
1989-97	Professor of Metal Physics (joint appointment of GKSS and TUHH)
1996-97	Director of the Materials Application and Technology Centre (GKSS)
since 1996	Director of the Institute for Materials Research (GKSS)
since 1997	Professor of Materials Science (TUHH)
since 2004	Member of the German Science Council

Lecturer information for the third ASI

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(8) Statement of current and/or planned research activities and interests:

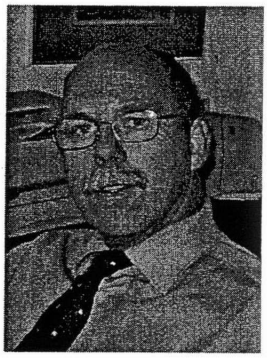
Current research area includes synthesis of inorganic powders, their characterization and surface modification, as well as processing and sintering. Main topics are the synthesis of nanostructured materials based on nanoparticles and the modification of surfaces with nanoparticles using colloidal methods. The fields of application of such materials are medical and biological, (drug delivery, hyperthermia, cell separation, biosensors), electronics and sensors.

Synthesis and Processing of Nanoparticulate Material

Heinrich Hofmann,
Institute of Materials, Swiss Federal Institute of Technology, EPFL,
Lausanne, Switzerland

Abstract:
Nanotechnology is mainly based on effects found in nanostructured materials. Examples are nanosized semiconductors where the color of the photoemission is controlled by the size of the particles or giant magnetic resistance, where the layer has to be smaller than some nm. The challenges for the material scientists working in the field of synthesis and processing of such material is to developed methods which allows a precise and reproducible control of the nanostructures. To develop such new structures, a more basic understanding of nucleation, growth and assembly of the primary crystallites, also called "building blocs" is necessary. In this paper, the different synthesis step of nanostructured materials will be shown and, based on the own results, discussed in detail.

Biography: *Hofmann Heinrich,* Prof. Dr.-Ing., Swiss , born 1953, has graduated as engineer in



foundry technology at the Applied University at Duisburg (D) and as engineer in Materials Science at the Technical University at Berlin, he got his PhD in Material Science with a thesis prepared at the Powder Metallurgy Laboratory at the MPI in Stuttgart in the materials science area. From 1983 until 1985 he worked as senior scientist at the Powder Metallurgy Laboratory, at the Max-Planck-Institute Metal Science in Stuttgart. In 1985 he begins as senior researcher and later as leader of inorganic materials research at the R&D center of Alusuisse-Lonza Services AG, at Neuhausen-am-Rheinfall. In 1993 he joins the EPFL (Swiss Federal Institute of Technology) as extraordinary Professor and Director of the Powder Technology Laboratory (LTP) at the Department of Materials science and engineering. His research area includes synthesis of inorganic powders, their characterization and surface modification, as well as processing and sintering. He is mainly concerned with the synthesis of nanostructured materials based on nanoparticles and the modification of surfaces with nanoparticles using colloidal methods. The fields of application of such materials are medical and biological, (drug delivery, hyperthermia, cell separation, biosensors), electronics and sensors.

Lecturer information for the third ASI

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(8) Statement of current and/or planned research activities and interests:

My research focuses on magnetic nanoparticles that have very uniform sizes, and we study their fundamental behavior., as well as possible applications in data storage media, permanent magnets, and biomedicine. One of the consequences of this monodispersity is that the particles can then self-assemble into arrays, just as atoms come together to form a crystal. We are investigating the collective behavior of the nanoparticle arrays that are analogous to those in crystals. Isolated iron atoms do not interact with each other and are paramagnetic, but in an iron crystal the interactions lead to ferromagnetism. Superparamagnetic-to-ferromagnetic and insulator-to-metal phase transitions are expected as the nanoparticles are brought closer together. We have also developed a method to replace the surfactant coating the particles with an inorganic matrix, and are exploring methods that exploit this approach to prepare functional nanocomposites.

INTERACTIONS OF MAGNETIC NANOPARTICLES IN SELF-ASSEMBLED ARRAYS

Sara A. Majetich
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Abstract:

We describe the preparation and properties of highly monodisperse iron nanoparticles, and nanostructures made from them. We have investigated the effects of changing the particle size, spacing, degree of structural order, and matrix material. The particles were synthesized by high temperature solution chemistry methods, and ranged in size from 3 to 20 nm. The particles were self-assembled either by solvent evaporation to prepare monolayer and multilayer arrays or glassy assemblies, or by slow diffusion of a poor coordination solvent to form well ordered 3D nanoparticle crystals. The morphology of the nanostructures formed was studied by transmission electron microscopy (TEM) and small angle x-ray scattering (SAXS), and the magnetic properties were revealed through zero field cooled magnetization, hysteresis loop, and magnetic relaxation measurements. In samples where dipolar interactions were expected to dominate, we found that magnetostatic models could explain the results qualitatively but not quantitatively. In particular, we observed notably greater magnetic relaxation rates in the arrays formed by slow diffusion, which had the highest degree of structural ordering. We compare the magnetic properties of arrays with different degrees of structural order to bulk amorphous and crystalline ferromagnets. Preliminary results are presented showing how the matrix surrounding the nanoparticles can be modified, or even replaced with an inorganic material. We show how the choice of the matrix affects the strength of the magnetic coupling, and describe a model of exchange interactions between nanoparticles, and how it can be tested.

Biography:

Shape Memory Alloys

Shuichi Miyazaki
Institute of Materials Science, University of Tsukuba
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Abstract: Shape memory effect and superelasticity are closely associated with the martensitic transformation which is characterized by a diffusionless lattice distortion. The basic characteristics of the martensitic transformation were first briefly explained. Mechanisms of the shape memory effect and superelasticity were explained using schematic models. Deformation behavior associated with one-stage or multi-stage martensitic transformation was explained. A method for calculating the recoverable strain was explained by introducing a lattice correspondence between the parent and martensite phases and the corresponding lattice deformation matrix. History and future prospects of the development and applications of shape memory alloys will be shown in the seminar.

Biography: Prof. Shuichi Miyazaki obtained a Ph. D. degree in Materials Science and Engineering from Osaka University. After receiving his Ph. D., Prof. Miyazaki joined University of Tsukuba as an Assistant Professor. He was promoted to Associate Professor in 1990, and then Professor in 1998, a post he still holds today. In addition, during the 1980's, Prof. Miyazaki was a Visiting Scientist at the University of Illinois and a Gredden Visiting Senior Fellow at the Western Australia. In the 1990's, Prof. Miyazaki was an Honorary Fellow at the University of Minnesota, Visiting Professor at the University of Franche-Comte and a Mosey Visiting Senior Fellow at the University of Western Australia.

Prof. Miyazaki has been the recipient of several awards, including the Academic Deed Award from the Japan Institute of Metals in 1995, the Yamazaki-Teiichi Prize from the Foundation for promotion of Material Science and Technology of Japan in 2002, and the Minister Award from the Ministry of Education, Culture, Sports, Science and Technology, Japan in 2004.

Prof. Miyazaki has published several books, including Shape Memory Alloys, Mechanical Properties of Shape Memory Alloys, Shape Memory Alloys-From Microstructure to Macroscopic Properties, Shape Memory Materilas and several other books. He has also co-authored more than 300 technical papers published in Materials Science and Engineering.

Lecturer information for the third ASI

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(8) Statement of current and/or planned research activities and interests:

(a) TiNi-based shape memory alloys
(b) Ni-free Ti-based biomedical shape memory and superelastic alloys
(c) Sputter-deposited shape memory alloy thin films
(d) Microactuators utilizing sputter-deposited shape memory thin films
(e) High temperature shape memory alloys
(f) Melt-spun shape memory alloy ribbons

CHALLENGES OF PROCESS METALLURGY TODAY

Miyuki Hayashi[2], Taishi Matsushita[1] and Seshadri Seetharaman[1]
[1]Department of Materials Science and Engineering
Royal Institute of Technology, Stockholm, Sweden
[2]Department of Chemistry and Materials Science
Tokyo Institute of Technology, Tokyo, Japan

Abstract:
With the advances in technology, there is a strong demand for materials with superior properties. This is true with respect to modern functional materials as well as conventional materials like steel. The present paper highlights, by means of some case studies, from the work carried out by the authors, some of the problems associated with the development and optimization of materials processes. The efforts to bulk-synthesize alloys, intermetallics and composite materials in the nanoscale by the hydrogen reduction route have shown extremely positive results.

In another study, it was shown that the nitirdation process of $Fe_{17}Nd_2$ alloys was strongly influenced by the purity of the nitrogen gas used. Measurements of physical properties like thermal diffusivities, surface- and interfacial tensions have proven to be extremely valuable in process and material design. This is illustrated in the case of industrial alloys like Ni-based super alloys as well as traditional materials like coke.

Silicate melts play an important role in the production of conventional materials. The structure of silicate melts is extremely complicated due to the polymerization of silicates. The structure is sensitive to the composition of the silicates, the nature of the cations present as well as temperature. Spectroscopic methods have been used to study the structure of silicate melts.

Biography:

Dr. Miyuki Hayashi is Assistant Professor at the Tokyo Institute of Technology, Dr. Taishi Matsushita is Senior Research Associate and **Seshadri Seetharaman,** Professor at the Department of Materials Science and Engineering, Royal Institute of Technology, Stockholm, Sweden

Self-assembly and self-organization : an overview
Application to magnetic materials

Olivier Fruchart

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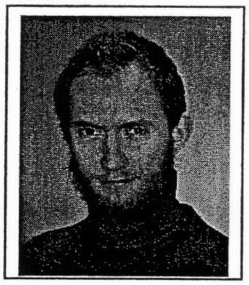
Abstract:

An overview of the field of epitaxial self-organization on surfaces is proposed. Different mechanisms responsible for self-organization will be covered, with examples taken from semiconductors, oxides and metals: self-assembly on flat surfaces; self-organization on arrays of steps (vicinal surfaces), intrinsic and extrinsic surface reconstructions, arrays of interfacial dislocations, self-organized vertical stackings. Then, I will discuss where self-organization can be useful for magnetism: study of ferromagnetic order in low dimension; dimensional dependence of spin, orbital momentum and magnetic anisotropy; model systems for micromagnetism; self-organization for magnetic materials at room temperature.

This document is intended to be an introduction to the field. Thus, it remains very general. Readers interested in the field are encouraged to follow the numerous references given at the end of the document.

Biography:



General: born 1971; married, one child.

1994: graduated from *École Normale Supérieure* (rue d'Ulm), Paris.

1998: PhD thesis graduation, in Laboratoire Louis Néel (Grenoble), under the supervision of D. Givord. (*Fabrication, study and modeling of a model magnetic system: arrays of ultra-thin submicrometer-sized Fe(110) dots with in-plane anisotropy*)

1999: Post-doctoral fellow in the MPI für Mikrostrukturphysik (Halle, Germany) under the supervision of J. Kirschner [*self-organization of vertical Co/Au(111) nano-columns*]

2000 – : permanent position as a scientist in Laboratoire Louis Néel (CNRS, Grenoble).

2003: Habilitation graduated from Université Joseph Fourier (Grenoble) (*Epitaxial self-organization: from surfaces towards magnetic materials*).

Domains of expertise: epitaxial growth, surface magnetism, micromagnetism.

Teaching: lectures and practicals (Currently, Master *Engineering of Magnetic Materials*)

Hobbies: Hiking, skiing, photography, wood working.

Lecturer information for the third ASI

(1) Name:
Masako YUDASAKA

(2) Position:
Principal researcher

(3) Institution:
NEC Corporation
Fundamental and Environmental Research Laboratories

(4) Mailing Address:
34 Miyukigaoka, Tsukuba, Ibaraki 305-8501, Japan

(5) Telephone number:
81-(0)29-850-1190

(6) Fax number:
81-(0)29-850-1366

(7) E-mail address and home page URL:
yudasaka@frl.cl.nec.co.jp

(8) Statement of current and/or planned research activities and interests:

I have been working mainly in the filed of physical chemistries and material chemistries. These days, I am interested in two researches:
1) Chemistry of carbon nanotubes.
2) Application of carbon nanotubes to gas storage media and bio-medical use.

Lecturer information for the third ASI

(1) Name:
Yoshiyuki Kawazoe

(2) Position:
Professor
General Manager, Center for Computational Materials Science

(3) Institution:
Institute for Materials Research, Tohoku University

(4) Mailing Address:
2-1-1 Katahira, Aoba-ku, Sendai, 980-8577, Japan

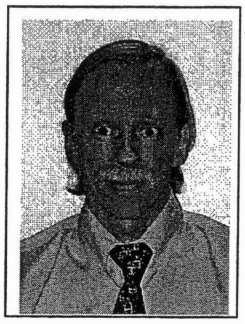
(5) Telephone number:
+81-22-215-2050

(6) Fax number:
+81-22-215-2052

(7) E-mail address and home page URL:
kawazoe@imr.edu
http://www.kawazoe.imr.edu/

(8) Statement of current and/or planned research activities and interests:
My research group members are studying from the very basic quantum mechanical theory to develop useful software systems, which could be applied to design fundamentally new materials in the nanotechnology. We use dedicated supercomputing system Hitachi SR8000, which gives around 1TFLOPS for the first principles computations. Recent research highlights are (1) silicon fullerenes, which we predicted and later found experimentally, (2) CdSe nanoclusters, which are expected to be used in cancer detection, (3) conducting polymers for nanoscale integrated circuits, (4) transparent magnets, (5) Pb-free piezoelectric materials, and more. My research group is composed of a variety of researchers and students from over the world; US, Russia, China, India, Iran, Singapore, Australia, Germany, Thailand, etc. and welcomes you to join us.

Lecturer information for the third ASI



(1) Name: Mark Johnson

(2) Position: Research Physicist

(3) Institution: Naval Research Laboratory

(4) Mailing Address: Mail Code 6360
Naval Research Laboratory
4555 Overlook Av SW
Washington DC 20375 USA

(5) Telephone number: (202) 767-6265

(6) Fax number: (202) 767-1697

(7) E-mail address and home page URL: mjbooj@anvil.nrl.navy.mil

(8) Statement of current and/or planned research activities and interests: The focus of my work is basic research in the physics of spin polarized transport. Topics include spin injection, spin accumulation, and spin polarized tunneling. Materials systems of interest include metals, semiconductors, and superconductors. Other topics of active research include nanoscience and biotechnology. Most of my research is experimental, but about 20% of my papers are theoretical.

Lecturer information for the third ASI

(1) Name: Ping SHENG

(2) Position: Department Head & Professor,
Department of Physics and
Director, Institute of Nano Science
and Technology

(3) Institution: Hong Kong University of Science & Technology

(4) Mailing Address: Department of Physics
Clear Water Bay
Kowloon
Hong Kong

(5) Telephone number: (852) 2358-7506

(6) Fax number: (852) 2358-1652

(7) E-mail address and home page URL: sheng@ust.hk
http://physics.ust.hk/department/staff.html

(8) Statement of current and/or planned research activities and interests:

Wave and electronic transport in disordered materials; microstructure and physical properties of composites; liquid crystals; flow in porous media; complex fluids; wave localization; and mesoscopic phenomena.

Lecturer information for the third ASI

(1) Name:

Terunobu MIYAZAKI

(2) Position:

Professor, Tohoku University

(3) Institution:

Department of Applied Physics Graduate School of Engineering, Tohoku University

(4) Mailing Address:

Aobayama 05, Sendai,980-8579,Japan

(5) Telephone number:

+81-22-217-7946

(6) Fax number:

+81-22-217-7947

(7) E-mail address and home page URL:

miyazaki@mlab.apph.tohoku.ac.jp

http://www.apph.tohoku.ac.jp/miyazaki-lab/index.html

(8) Statement of current and/or planned research activities and interests:

1. Spin and transport in nanoscale magnetic materials
2. Development of tunnel magnetoresistance (TMR) read heads
3. Microfabrication process in hybrid magnetic materials and development of magnetic random access memory (MRAM)
4. Functionality of organic/inorganic hybrid materials
5. The search for new and highly functionalized magnetic materials

Lecturer information for the third ASI

(1) Name: Urs Hafeli

(2) Position: Assistant Professor

(3) Institution: University of British Columbia
Division of Pharmaceutics and Biopharmaceutics
Faculty of Pharmaceutical Sciences

(4) Mailing Address:
Room 63, 2146 East Mall
Vancouver, B.C. V6T 1Z3 CANADA

(5) Tel number: 604-822-3711

(6) Fax number: 604-822-3035

(7) E-mail address and home page URL:
uhafeli@interchange.ubc.ca
www.magneticmicrosphere.com/urs/

(8) Statement of current and/or planned research activities and interests:
Drug delivery / magnetic drug delivery
Cancer therapy
Radiopharmaceutical development / brachytherapy / microdosimetry

Lecturer information for the third ASI

(1) Name: Tim St Pierre

(2) Position: Associate Professor

(3) Institution: The University of Western Australia

(4) Mailing Address: School of Physics (M013), The University of Western Australia, 35 Stirling Hwy, Crawley, WA 6009, AUSTRALIA

(5) Telephone number: +61-8-6488-2747

(6) Fax number: +61-8-6488-1879

(7) E-mail address and home page URL:

stpierre@physics.uwa.edu.au

http://www.biophysics.uwa.edu.au/Tim.html

(8) Statement of current and/or planned research activities and interests:

Current research activities center on investigating the role of magnetic materials in medicine and biology and the development of novel magnetic measurement and imaging techniques. The research falls into three main categories

Investigation of the physical and chemical properties of naturally occurring magnetic materials in biological systems

Development of magnetic nanoparticles for use in biomedical and biotechnological procedures.

Development of magnetic measurement and imaging techniques to enable non-destructive and non-invasive methods of measurement and tracking of magnetic materials in biological systems.

Lecturer information for the third ASI

(1) Name: SESHADRI SEETHARAMAN

(2) Position: PROFESSOR, PRO DEAN

(3) Institution: Dept. of Materials Science & Engg.

(4) Mailing Address: Dept. of Mat. Sci. & Engg.,
Royal Institute of Technol.,
SE-100 44 Stockholm, Sweden

(5) Telephone number: +46-8-790 83 55

(6) Fax number: +46-8-790 09 39

(7) E-mail address and home page URL: raman@kth.se

(8) Statement of current and/or planned research activities and interests:

High temperature materials Processes, Thermodynamic and kinetic studies of high temperature reactions, Measurement and Modelling of Thermochemical and thermophysical properties of metallic and oxidic materials in solid and liquid states. Bulk synthesis of nanoalloys, intermetallics and composite materials. Iron and steelmaking.

NEW MATERIALS DEIGN
BY QUANTUM MECHANICAL COMPUTER SIMULATION
- Fundamentally New Materials and Devices based on the Atomic and Molecular Assembly -

Yoshiyuki Kawazoe
Institute for Materials Research, Tohoku University
2-1-1 Katahira, Aoba-ku, Sendai, 980-8577 Japan

Abstract:

Prediction of the structures and properties of new nanoscale materials is becoming possible, based on the available computer power and new quantum mechanical methods. Only by the usual silicon technology, industrial requirement for higher-speed and higher-density in computer could not be achieved efficiently, and a fundamentally new paradigm of nanotechnology based on the atomic and molecular assemblies is strongly expected. Experimental realization of nanotechnology is still in the research level and ***ab initio*** calculation plays an important role there for the future nanoscale devices.

We are developing an original computer code TOMBO, which has several better features than any other existing programs for materials design based on the quantum mechanical theory. Especially, TOMBO is one of the rare cases to realize distributed computing environment connecting several supercomputers located in different sites via SuperSINET. Based on the theoretical development, we have successfully predicted several new atomic structures and properties of non-observed materials, such as silicon fullerene, which was found recently based on our theoretical prediction. Hydrogen absorption in ice is also a typical example of large scale computer simulations, which is one of the best environmentally safe hydrogen storage materials. These topics will be introduced and discussed in the talk.

Autobiography:

I. Curriculum vitae

December 1947: Born in Sendai, Japan
March 1975: Dr. of Science, Department of Physics, Tohoku University, Majored in theoretical nuclear physics
April 1975: Research Associate, College of Arts and Sciences, Tohoku University
(March–August 1981: Invited researcher at Max Planck Institute, Germany)
November 1981: Associate Professor, Education Center for Information Processing, Tohoku University
(February-May 1986: Invited Professor at WACAE, Australia)
May 1990: Professor, Institute for Materials Research, Tohoku University
(December 1991-February 1992, February-May 1993: Visiting Professor at University of California)
(December 1994- : Advisory Professor at Fudan University and Nanjing University, China)

II. Prizes:

1. November 1991 : Eastern Prize, Indian Embassy
2. April 1994 : Academic Prize, Information Center for Science and Technology
3. March 2003: Distinguished Academic Prize, Japan Institute for Metals

III. Publications:

1. "Phase Diagrams and Physical Properties of Nonequilibrium Alloys" Chief Editor, Springer(1997).
2. "Materials Design by Computer Simulation", Y. Kawazoe, K. Esfarjani, and K. Ohno, Springer(1999)
3. More than 50 books and more than 500 ISI journal papers.

Participant information for the third ASI

(1) Name: Dr Julie Cairney

(2) Position: New South Global Postdoctoral Research Fellow

(3) Institution: University of New South Wales

(4) Mailing Address: Materials Science and Engineering, University of New South Wales, Sydney, 2052, NSW, Australia

(5) Telephone number: +61 2 9385 4440

(6) Fax number: +61 2 9385 5956

(7) E-mail address and home page URL: jcairney@materials.unsw.edu.au

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Dr Julie Cairney's background is in electron microscopy and physical metallurgy. She carried out her PhD at the University of New South Wales in Sydney, Australia, where she also obtained her Bachelor of Metallurgical Engineering. Her PhD involved optimisation of the use of the focused ion beam miller, which at the time was mainly used by only the semiconductor industry, for materials characterization. She then undertook a postdoctoral position at the University of Birmingham, UK, performing an in depth TEM study of creep mechanisms in Ni_3Al, under the Anglo-Australian Fellowship Scheme. She has since returned to Australia and has been working for the last 18 months on the characterization of microstructure–property relationships in hard coatings using a novel combination of modern techniques.

Participant information for the third ASI

(1) Name: **Robert Moon**

(2) Position: **ARC Postdoctoral Fellow**

(3) Institution: **The University of New South Wales**

(4) Mailing Address: **School of Materials Science & Engineering**
Sydney, NSW, 2052

(5) Telephone number: **61.2.9385.4440**

(6) Fax number: **61.2.9385.5956**

(7) E-mail address and home page URL: **moon@materials.unsw.edu.au**

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Dr Robert Moon received his PhD from Purdue University, USA and has been a Postdoctoral researcher at the University of New South Wales, Australia since 2000. His experimental and modeling investigations have covered a wide range of topics in the fracture and fatigue of monolithic composites, layered composites, and gradient composites, in which the material constituents were either ceramic-ceramic, polymer-ceramic, or metal-ceramic. Additionally, he has been characterizing the role of microstructure on the fracture events that occur at surface and subsurface in ceramic materials during indent, scratch and wear testing.

Participant information for the third ASI

(1) Name: Maria Hrmova

(2) Position: Associate Professor

(3) Institution: The University of Adelaide

(4) Mailing Address: Waite Campus, Glen Osmond SA5064, Australia

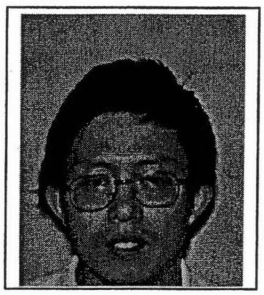
(5) Telephone number: 61 8 8303 7280

(6) Fax number: 61 8 8303 7102

(7) E-mail address and home page URL: maria.hrmova@adelaide.edu.au
http://www.agwine.adelaide.edu.au/people/plant/mhrmo01.html
http://www.designscene.com.au/clients/nn/30_group/hrmova_maria.htm

(8) A brief autobiography or your introduction to other participants (up to 9 lines):
Dr Maria Hrmova, Associate Professor at the University of Adelaide, obtained her BSc, MSc, and PhD degrees in biochemistry from the Comenius University and the Slovak Polytechnical University in Czecho-Slovakia. She has held research positions at the University of Colorado in USA, at La Trobe University in Australia and in the Institute of Chemistry in Czecho-Slovakia. After her arrival to Australia in 1991 she has been funded by numerous grants from ARC and GRDC. Currently she investigates "Molecular mechanisms of catalysis and the basis of substrate specificity in polysaccharide hydrolases", using techniques of X-ray crystallography and molecular modelling. Dr Maria Hrmova has established track record of publishing around 70 original articles in international journals such as Structure, Plant Cell, Journal of Biological Chemistry, Biochemical Journal, European Journal of Biochemistry, Proteins: Structure, Function and Genetics, Carbohydrate Research, Plant Physiology, etc. Her research interests include mechanism of catalysis and substrate binding of catalytic proteins using techniques of X-ray crystallography and molecular modelling.

Participant information for the third ASI



(1) Name: John Zhu

(2) Position: Lecturer

(3) Institution: Curtin University of Technology, Australia

(4) Mailing Address: Dept of Chemical Engineering, Curtin University of Technology, GPO Box U1987, Perth, WA 6845, Australia

(5) Telephone number: 61 8 9266 3777

(6) Fax number: 61 8 9266 2681

(7) E-mail address and home page URL: zhuz@vesta.curtin.edu.au

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Education

PhD:	Department of Chemical Engineering, the University of Queensland, Australia, May 2002
MEng	Department of Environmental Engineering, Xi'an University of Architecture and Technology, P.R.China, Apr 1996
BEng	Department of Environmental Engineering, Xi'an University of Architecture and Technology, P.R. China, Jul 1991

Present Employment

Lecturer: Dept of Chemical Engineering, Curtin University of Technology, Australia

Participant information for the third ASI

(1) Name: Dr. Bock Christina

(2) Position: Research Officer

(3) Institution: ICPET, National Research Council of Canada

(4) Mailing Address: ICPET, M-12
Montreal Road
Ottawa, Ontario
K1A 0R6
Canada

(5) Telephone number: 613 990 2252

(6) Fax number: 613 941 2529

(7) E-mail address and home page URL: Christina.Bock@nrc-cnrc.gc.ca
www.icpet-itpce.nrc-crnc.gc.ca

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Christina Bock is a Research Scientist at the National Research Council Canada, Ottawa, where she has been on staff since 1997. She received a BS in chemistry/chemical engineering from the Technikum Winterthur, Switzerland in 1991, where she subsequently spent one year teaching and supervising laboratories in the physical chemistry department. She then obtained a Ph.D. in physical and analytical chemistry at the University of Calgary, Canada in 1997. Her research interests are directed towards electro-catalysis. She is involved with industrial as well as fundamental projects, and has been active in identifying anode catalysts for the oxidation of organic toxins and fuels. She has and is involved with several committees of Electrochemical Society, Inc., including being chairperson. She also organized a one day symposium on "Energy and the Environment" for the Canadian section of the Electrochemical Society, Inc. in the fall of 2000.

Participant information for the third ASI

(1) Name: Kuiying Chen

(2) Position: Associate Professor

(3) Institution: Structures, Materials and Propulsion Laboratory
Institute for Aerospace Research, National Research Council Canada

(4) Mailing Address: Structures, Materials and Propulsion Laboratory
Institute for Aerospace Research, National Research Council Canada, M-3 Building
Montreal Rd. Ottawa, K1A 0R6, Ontario, Canada

(5) Telephone number: 613-993-1247

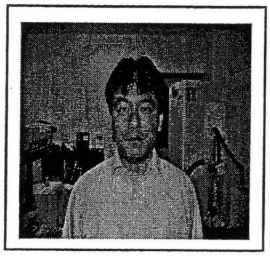
(6) Fax number: 613-990-7444

(7) E-mail address and home page URL: kuiying.chen@nrc-cnrc.gc.ca

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Dr. Kuiying Chen is now working as an associate professor at Structures, Materials and Propulsion Laboratory, Institute for Aerospace Research, National Research Council (NRC) Canada from 2001 to now. Before he joined NRC, he worked at Ames Laboratory of US-DOE and Los Alamos National Laboratory of US-DOE and Ohio University as a research scientist. His major research includes: modeling and simulation of structural and functional materials.

Participant information for the third ASI



(1) Name: **Manabu Nakazono**

(2) Position: **Assistant Professor**

(3) Institution: **Kyushu University**

(4) Mailing Address: **3-1-1 Maidashi, Higashi-Ku, Fukuoka 812-8582, Japan**

(5) Telephone number: **+81-92-642-6600**

(6) Fax number: **+81-92-642-6601**

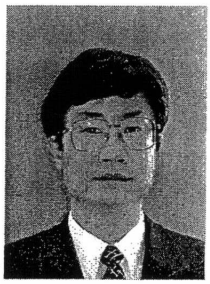
(7) E-mail address and home page URL: **nakazono@phar.kyushu-u.ac.jp**

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Brief autobiography

1990-1992	Master Program, Graduate School of Pharmaceutical Sciences, Kyushu University
1996-1999	Doctor Program, Graduate School of Pharmaceutical Sciences, Kyushu University
1999-2000	Postdoctor Program, Department of Chemistry, University of Basel (Switzerland)
2001-	Assistant Professor, Graduate School of Pharmaceutical Sciences, Kyushu University

Participant information for the third ASI



(1) Name: Bao-Ping ZHANG

(2) Position: Researcher

(3) Institution:
Photodynamics Research Center,
RIKEN (The Institute of Physical and Chemical Research)

(4) Mailing Address:
519-1399 Aoba, Aramaki, Aoba-ku, Sendai 980-0845, Japan

(5) Telephone number:
+81-22-228-2012

(6) Fax number:
+81-22-228-2010

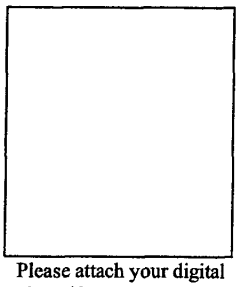
(7) E-mail address and home page URL:
bzhang@postman.riken.go.jp

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Bao-Ping Zhang received the B.Sci degree in Physics from Lanzhou University, China, in 1983, the M.S. degree in electronic engineering from Hebei Semiconductor Research Institute, China, in 1986 and the Ph.D. in applied physics from the University of Tokyo, Japan, in 1994.

In 1994, he joined the Photodynamics Research Center, RIKEN (The Institute of Physical and Chemical Research) as a researcher. Since 1999, he also works as a guest associate professor in Department of Physics, Graduate School of Science, Tohoku University, Japan. Since he joined RIKEN, his research includes fabrication and optical study of low-dimensional semiconductors and photonic crystals. His recent research has been focused on fabrication and characterization of ZnO based materials and nanostructures.

Participant information for the third ASI



Please attach your digital photo if you do not mind.

(1) Name: ERNULT Franck

(2) Position: Post-doctoral fellow

(3) Institution: Institute for Materials Research

(4) Mailing Address: Institute for Materials Research, Tohoku University
Katahira 2-1-1 Aoba-ku Sendai-shi

(5) Telephone number: 022-215-2097

(6) Fax number: 022-215-2096

(7) E-mail address and home page URL: ernult@imr.tohoku.ac.jp

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

After obtaining my Ph. D degree in the laboratory "Nanostructures et Magnétisme" of the French atomic energy commission (CEA) in Grenoble (France) on the subject "Antiferromagnet/Ferromagnet exchange coupling in bilayers and trilayers", I went to Japan as a post-doctoral fellow of JSPS (Japanes Society for the Promotion of Science). I am now studying "Spin-dependent single-electron tunneling in nanostructures" at the laboratory of Professor Takanashi.

==========> Please send this form back to the following address by June 10, 2004:

Participant information for the third ASI

(1) Name:
Yuezhen Bin

(2) Position:
Research Associate

(3) Institution:
Nara Women's University

(4) Mailing Address:
Graduate School of Humanities and Science
Nara Women's University
Kitauoya NishiMachi,
Nara 630-8263
Japan

(5) Telephone number:
0742-20-3636, 0742-22-6157

(6) Fax number:
0742-20-3234

(7) E-mail address and home page URL:
yuezhen@cc.nara-wu.ac.jp

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I am a country-bred in Hunan province in the south of China. The mountain and a lake made my house inconvenient to the school and for shopping. At that time I really wanted to know what's happening outside and dreamed of working in a high-rise building in a city. So I selected a university in Dalian which is in the northeast and got my master degree in Xi'an in the west, and then found a job in Shenzhen in the south of China with an intention of moving as far as possible to broaden my outlook and experience new life. I came to Japan to get my Ph.D with the same intention. This intention infiltrated the all of my activities including my research of developing new materials and making a lot of friends in different fields.

Participant information for the third ASI

(1) Name:
NAKAGAWA, Masaru

(2) Position:
Associate Professor

(3) Institution:
Chemical Resources Laboratory, Tokyo Institute of Technology

(4) Mailing Address:
R1-26, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan

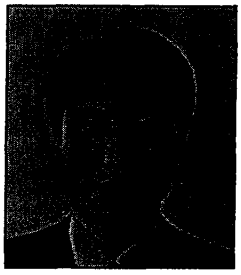
(5) Telephone number:
+81-45-924-5266

(6) Fax number:
+81-45-924-5247

(7) E-mail address and home page URL:
mnakagaw@res.titech.ac.jp
http://www.res.titech.ac.jp/~hikari/hikarij.html

(8) A brief autobiography or your introduction to other participants (up to 9 lines):
My major field is surface science dealing with photoreactive molecular and polymer surfaces. I have ever studied on photoalignment of liquid crystals and mesoporus silica hybrids on polymer surfaces responding to polarized light, together with Prof. Kunihiro Ichimura and Prof. Takahiro Seki. At present, I am devoted to photoreactive single-layer adsorption films formed by organic molecules and polymers on solid surfaces. This is because the single-layer adsorption films are considered as ultimate organic materials to control surface properties of materials such as wetting, adsorption, friction and so forth by photochemical means.

Participant information for the third ASI



(1) Name: Soshu Kirihara

(2) Position: Assistant Professor, Dr. Eng.

(3) Institution: Joining and Welding Research Institute,
Osaka University

(4) Mailing Address: 11-1 Mihogaoka Ibaraki, OSAKA 567-0047, JAPAN

(5) Telephone number: +81-6-6879-8693

(6) Fax number: +81-6-6879-8693

(7) E-mail address and home page URL: kirihara@jwri.osaka-u.ac.jp
http://www.jwri.osaka-u.ac.jp/%7emri1/

(8) A brief autobiography or your introduction to other participants:

Age:	34 years old
Favorite Dish:	Curry and Rice
Hobby:	Watching Movies
Special Ability:	Martial Arts

Participant information for the third ASI

(1) Name:

Kenji Kondo

(2) Position:

Lecturer

(3) Institution:

Laboratory of Quantum Electronics

Research Institute for Electronic Science

Hokkaido University

(4) Mailing Address:

Nishi-6, Kita-12, Kita-ku, Sapporo, 060-0812, Japan

(5) Telephone number:

+81-11-706-2867

(6) Fax number:

+81-11-706-2883

(7) E-mail address and home page URL:

kkondo@es.hokudai.ac.jp

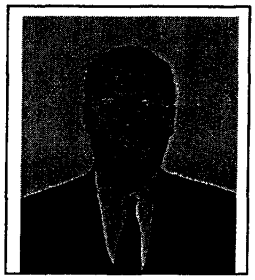
http://qed4.es.hokudai.ac.jp/

(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I was born at Saitama Prefecture in Japan. I went to Kawagoe high school. This high school has become famous recently because it was used as a TV drama's situation. At our high school, you can see male synchronized swimming. That attracted mass media.

After I got master-degree, I had worked for Sony Corporation for about 11 years. I had researched semiconductor lasers, solid-state lasers, and optical-pickups at Sony Research Center. Then, I had researched condensed matter theory at ISSP of the University of Tokyo until I got this position. Now I work at Hokkaido University.

Participant information for the third ASI



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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I live in Nagano that is situated in the center of Japan, where the Winter Olympic Games were held in 1998. Summer is refreshingly cool and winter is a snowy wonderland. The many mountains have also ensured a good supply of healthful hot spring spas.

I took the master's degree in 1989 and started to work for Nagano Pref. government. I've worked in Nagano Pref. Institute of Technology since 1996 and got the degree of Doctor of Engineering at Nagoya University in 2002.

Participant information for the third ASI

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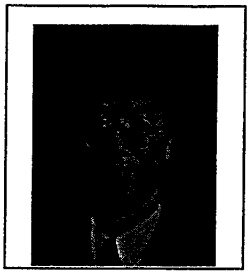
(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I earned Ph.D and MS degrees from the Purdue University after graduated from the Chonbuk National University. During the study in the Purdue I majored in the electronic materials under the direction of Professor Robert W. Vest.. After getting the Ph.D, I was employed in the R&D center of LG metals for a few months. Currently I am a professor in the Chonbuk National Univeristy in Korea. My research interests are dielectric materials, carbon nanotubes, and magnetoresistive sensors.

Participant information for the third ASI



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1) March 1975–Feb. 1979, Seoul National University, BS

2) March 1979 – Feb. 1981, Graduate School of Seoul National University, MS

3) Sept. 1987 – Aug. 1990, Univ. of Connecticut, Polymer Science, Ph.D.

4) Dec. 1993 – March 1994, IBM Almaden Research Center, Visiting Scientist

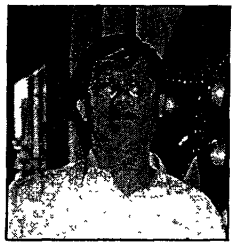
5) Aug. 1996 – July. 1997, Liquid Crystal Institute, Kent State University, Visiting Scientist

6) Jan. 1999 – Feb. 1999, Tokyo Institute of Technology, Visiting Scientist

7) June 2003- July 2004, Institute of Physics, National Academy of Sciences of Ukraine, Visiting Scientist

8) March 1983 - Present, Dept. of Chemical Engineering, Keimyung University, Professor

Participant information for the third ASI



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(8) A brief autobiography or your introduction to other participants (up to 9 lines):
Dr. Tien-Syh Yang proceeds as a researcher, cooperated with Prof. Ming-Show Wong in Dept. of Materials Science and Engineering of National Dong-Hwa University. My research field extends over surface and catalytic science & engineering, including photocatalysis, electrochromism, nanotechnology, syntheses of thin films and various material characterization techniques. The thin-film materials include hard materials like diamond and c-BN, etc. as well as functional metal-oxides like TiO_2, WO_3, etc., prepared by various CVD & PVD methods with or without ion beam procedures. I received his B.A. in Chemistry from National Chung-Hsing University in Taiwan in 1989, Master and Ph.D. degree of Applied Chemistry in Dept. of Chemistry of National Tsing-Hua University in Taiwan in 1991 and 1996, respectively.

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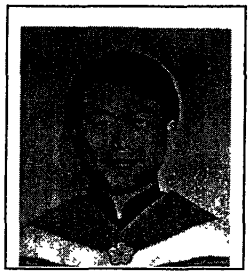

(1) Name:
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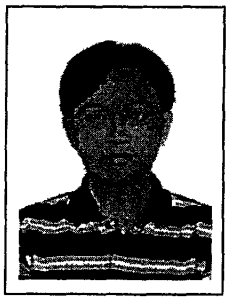
(8) A brief autobiography or your introduction to other participants (up to 9 lines):
I'm Sam, from Taiwan. I got my degree of materials science in National Cheng Kung University. I'm also working there as a postdoctor for 4 years. My area of expertise is electronic packaging. Research works include development of lead-free solder, interface reactions, microstructure and texture analysis.

Participant information for the third ASI



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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I am a postdoctoral researcher in the Department of Materials Science and Engineering, National Cheng Kung University (NCKU). I work under the guidance of Prof. Weng-Sing Hwang, who is also the President and CEO of Metal Industries Research and Development Center (MIRDC) in Taiwan. I obtained my Ph.D. degree in August 2001 and the topic of my Ph. D. thesis is "Development and Application of an Integrated Simulation System for Casting". My recent work is related to the development of mathematical models and related experimental verification for casting processes, steelmaking processes, micro-inkjet printing, packaging processes and multi-phase flow problems. It's my pleasure to attend the conference, I hope I have the opportunity to make friends with other delegates and learn a lot during the conference.

Participant information for the third ASI

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Wen-Wei Wu was born in Hualien, Taiwan, in 1975. He received a B. S. degree in mechanical engineering from Tamkang University in 1998, and a Ph. D degree in material science and engineering from Tsing Hua University (with Prof. L. J. Chen) in 2003, and then he has been a postdoctoral fellow in Prof. Chen's group since October 2003. His research interests include self-assembly nanodots and nanowires, in situ UHV TEM, Si-Ge nanostructure, metal silicide nanostructure, metallization on Si and Si-Ge alloy.

Participant information for the third ASI

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I was born in 1966, received my BS, MS and Ph.D in inorganic materials specialty of Zhejiang University from 1988 to 1994. During 1995~1997, as a post-doc research staff, I worked in state key laboratory of new ceramic and fine process of Tsinghua University, engaged in the design of multiphase ceramics and intelligent materials. Also, I worked in department of ceramic and glass engineering of Portuguese Aveiro University as visiting scholarship during 2000~2001. As a teacher of USTB, I have been working here for seven years. And my main projects are ecological recycling materials, microwave dielectric ceramics, nano-composites, advanced structural materials and metallurgic refractory which are financially supported by the funding of NSFC, High-tech R&D (863) Project and Edu Committee Sci & Tech Program etc.

Participant information for the third ASI

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Lishan Cui is the professor of Materials Science in the department of Materials Science and Engineering of University of Petroleum (China). He Obtained the doctor degree in Materials Science in 1994 from Dalian University of Technology in 1994. He is a Member of the Materials Research Society of China (C-MRS), University Key Teacher of the Ministry of Education. His research interests include shape memory alloys and their composites, solid-state phase transformation and high performance steel in the petroleum industry.

Participant information for the third ASI

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Dr. Huaijin Zhang is a professor of Institute of Crystal Materials (State Key Laboratory of Crystal Materials), Shandong University, P. R. China. Dr. Zhang's main research fields are: growth of laser and nonlinear crystal (included Nd:YVO_4, Nd:$GdVO_4$, Nd:$LuVO_4$, Re:YCOB, Re:GdCOB, LGS, CBN single crystal); characterization of crystal(included: thermal properties, defects of crystal, optical and laser properties); thin film materials.

Participant information for the third ASI

(1) Name:
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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I'm a Ph. D. candidate from the University of Science and Technology of China. I've being devoted to studying the chemical and physical properties of single molecules at 1 nanometer scale using scanning tunneling microscopy for 3 years after I finished my Ph. D. courses.
My research interests include single molecular chemistry, molecular self-assembly on surfaces, low-dimensional and mesoscopic physics, nano-electronics, nano-spintronics, and quantum information. I believe that these regions would be connected to each other more and more closely in the coming years.
I hope I could benefit and learn much from the famous scientists invited by the 3rd ASI. Thank JSPS for their kind organization.

Participant information for the third ASI

(1) Name: Hong Chun-yan

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1992. 9 ~1997.7, University of Science and Technology of China, Department of Material Science and Engineering, Bachelor.

1997. 9 ~2002.7, University of Science and Technology of China, Department of Polymer Science and Engineering, Ph. D.

2002. 8~ University of Science and Technology of China, Department of Polymer Science and Engineering, Lecturer.

Research Subject: Synthesis and characterization of hyperbranched polymers;
living radical polymerization.

Participant information for the third ASI

(1) Name: Hong Chun-yan

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

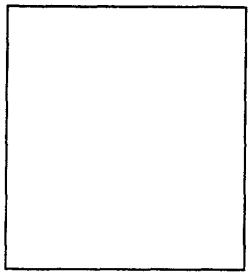
1992. 9 ~1997.7, University of Science and Technology of China, Department of Material Science and Engineering, Bachelor.

1997. 9 ~2002.7, University of Science and Technology of China, Department of Polymer Science and Engineering, Ph. D.

2002. 8~ University of Science and Technology of China, Department of Polymer Science and Engineering, Lecturer.

Research Subject: Synthesis and characterization of hyperbranched polymers;
living radical polymerization.

Participant information for the third ASI



(1) Name:
Xiaoping WANG

(2) Position:

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

Dr. Xiaoping Wang was born in 1964 at Jiangsu province of China. He graduated from University of Science and Technology of China (USTC), and now he is a professor in the department of USTC. His interest is in nanomaterial and nanofabrication, transport and mechanical properties of the molecules, the technique of scanning probe microscopy and its applications, and the film growth process. He has published more than 40 papers relevant to his research field.

Participant information for the third ASI

(1) Name: Qunxiang Li

(2) Position: Associate Professor, Ph.D.

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(8) A brief autobiography or your introduction to other participants (up to 9 lines):

I come from University of Science and Technology of China (USTC). I obtained my Ph.D, USTC, in 1999, and stayed at the Open Laboratory of Bond Selective Chemistry of USTC as a post-doctoral till June 2001. Now I am an associate professor of department of Chemical Physics, and a research member of Hefei National Laboratory of Physical Sciences at Microscale of USTC. My research interests include (1) theory of scanning probe microscopy (simulations of STM image and STS), (2) electronic transport property of molecular junction, (3) single molecular physical chemistry and computing materials science (electronic structure calculations by using DFT methods).

2004/09/09
JSPS revised

MEMO (Zao Paper)

Advanced Science Institute Ad Hoc network Business Meeting

Date: 14:00-16:15, July 26, 2004, Monday
Place: Miyagi-Zao Royal Hotel
Attendance: **Ms. Helen COOPER**
Director, Executive and External Relations, ARC
Ms. Weiping CHEN
Program Officer, Bureau of International Cooperation, CAS
Mr. Byung-Whan HO
Director, Division of International Programs, KOSEF
Dr. Elizabeth THERIAULT
Proxy for NRCC
Counsellor, Science and Technology,
Embassy of Canada in Tokyo
Ms. Joy CHIANG
Deputy Director
Department of International Cooperation, NSC
Dr. Christopher LORETZ
Director, NSF, Tokyo Regional Office
Prof. Hirochika INOUE
Inspector, JSPS
Ms. Yuko FURUKAWA
Director, International Programme Department, JSPS
Mr. Hisashi KATO
Head, Research Cooperation Division I, JSPS
Ms. Kumiko TANSHO
Head, Research Cooperation Division II, JSPS

Agenda:

I. Framework of the ASI

A. Name of the committee
It was agreed to change the name of the committee from "Advanced Science Institute Ad Hoc network" to "Steering Committee for the Asia-Pacific Advanced Science Institute (ASI)"

B. Purpose of the ASI

1. Building a network of next generation scientists in the Asia-Pacific region
2. Strengthening scientific excellence

C. Organization Framework

This committee consists of the following eight (8) funding agencies in seven (7) countries and regions.

It was agreed that this framework consists not of countries or regions but of funding agencies.

Australian Research Council (ARC)
Chinese Academy of Sciences (CAS)
Japan Society for the Promotion of Science (JSPS)
Korea Science and Engineering Foundation (KOSEF)
National Science Council (NSC)
National Science Foundation (NSF)
National Natural Science Foundation of China (NSFC)
National Research Council, Canada (NRCC)

II. Operation Guidelines of the ASIs

Reference: History of the ASIs

First Round:	2001	JSPS/New Frontiers of Intelligent Robotics
	2002	ARC/The Genome-Phenome Link
Second Round:	2003	Cancellation due to SARS
	2004	JSPS/New Frontiers of Functional Materials

A. Frequency of the ASI

Once a year in July or August would be the best.

B. Hosting and Rotation

All eight agencies are responsible for hosting the ASIs at least once. Therefore, CAS and NSFC will separately host the ASIs.

In the meantime, JSPS will not host the ASIs for another sixteen(16) years.

Any agency that volunteers to host the next ASI 2005 and/or 2006 should announce its willingness to the whole ASI member agencies by the end of September, 2004.

C. Selection of Topics

Any agency can propose a theme/topic for the next ASI by the end of September, 2004 for agreement.

e.g., Nano-Medicine, Nano-Biology, Nano-Material, IT etc.

D. Program Formation

1. Duration

Seven days including five-day sessions

2. Contents of Program

Programs should include lectures, presentations by younger participants, round table discussions and five-minute talks, etc.

The hosting agency should consider ways to make programs more interactive between lecturers and younger participants.

3. Lecturers

The number of lecturers should be limited to ten (10) as two sessions per day are appropriate.

4. Younger participants

Number:

Each agency can nominate up to six (6) younger participants to the ASIs.

Qualifications:

Younger participants, in principle, must have received their doctoral degrees in the last five (5) years. Exceptions are considered upon consultation with a hosting agency.

5. Size of the ASIs

The number of participants should be limited to about fifty (50) persons: ten (10) lecturers and about forty (40) younger participants. Attention should be given to gender balance.

E. Declaration of Funding Agencies

Most agencies, especially ARC, JSPS and NRCC, are required to abide by government standards of accountability for taxpayers in their own countries, when supporting ASIs.

Therefore, if the names of funding agencies cannot be indicated in documents like circulars, proceedings and web sites, it would be difficult to further fund the ASIs.

F. Others

We understand that the ASIs are purely scientific meetings and that it seems appropriate not to bring politics into science.

2004/07/26

Discussion points for the Ad Hoc network business meeting

I Framework of the ASI

1) Definition of "East-Asian" and "Pacific"
2) Organization Framework
3) Purpose of the ASI

II Operation Guideline of the ASI

* Planning by Preparatory Committee or Hosting organization

DETAILS

1) Frequency of ASI and Next Round
2) Rotation of host organization

First round		Second round	
2001	JSPS	2003	Cancellation due to SARS
2002	ARC	2004	JSPS

3) Selection of Topics
4) Selection of the Chair and host institution
5) Drafting programs
6) Selection of lecturers
7) Procedures for the selection of younger participants
8) Procedures for the cost sharing
9) Proceedings

III. Recording of the Ad Hoc business meeting

Steering Committee for Asia-Pacific Advanced Science Institute (ASI) Contact List

(as of 26 July 2004)

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(Principal Participant)

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National Research Council, Canada (NRCC)

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