

Report for JSPS Asian Academic Seminar FY2014 <Summary>

Date March 31, 2015

1. Title of Seminar JSPS-DST Asia Academic Seminar: Structure, Dynamics, and Functionality of Molecules and Materials

2. Purpose of Seminar

The Asia Academic Seminar is organized under the auspices of the Japan Society of Promotion of Science (JSPS) in Japan and the Department of Science and Technology (DST) in India. It has been held since 1994 in different fields of science in different Asian countries. The seminar is one of the most important programs for enhancing the research activities of young scientists in Asian countries. It is designed to spur scientific achievement in the region by introducing the latest scientific advances to young Asian researchers.

The title of the present seminar was "Spectroscopy, Theoretical Chemistry and Chemistry of Materials". Recent development of ultrafast spectroscopy including time-resolved X-ray diffraction techniques makes it possible to probe structural changes induced by external fields as well as detailed fluctuation and dynamics. In addition, various measurement techniques for dynamics with combination of electronic, magnetic, and other properties have been developed. Understanding of the dynamics of molecules and materials is essential for elucidation, control, and application of the functionalities. Furthermore, it is also required to develop new material science, which leads to structural and functional designs of novel materials. In the seminar, which is about structure, dynamics, and functionality of molecules, recent cutting edge scientific results were presented by world-renowned invited lecturers. In addition, people exchanges between lecturers and attendees in the seminar contribute to the educational activities. The following topics are discussed: Molecular origin of dynamical processes, electronic, magnetic and optical properties of functionalized molecules and materials, design of novel functionalized molecules and materials.

3. Period

From March 6, 2015 through March 10, 2015 (5 days)

4. Venue

Indian Association for the Cultivation of Science (IACS), Kolkata
Indian Institute of Science Education and Research (IISER), Kolkata

5. Organization

(1) Cosponsors

Japan Side	Japan Society for the Promotion of Science
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	National Institute for Natural Sciences, Institute for Molecular Science
India Side	Department of Science and Technology
	Indian Association for the Cultivation of Science (IACS) and Indian Institute of Science Education and Research (IISER) Kolkata

(2) Organizer

1) Japan side

Name in full Iwao Ohmine

Affiliation and Position Director General, Institute for Molecular Science

2) India side

Name in full Rabi Mukherjee

Affiliation and Position Director, Indian Institute of Science Education and Research, Kolkata

6. Program: Agenda, Topics, Related Activities (e.g., Reception, Excursion)

See attached program

7. Lecturers and Participants

1) Number of Persons

	Lecturers	Participants	Total
Japan side	13	10	23
(Number who participated under program funding)	13	9	22
India side	18	74	92
(Number who participated under program funding)	0	0	0
Other persons	4	14	18
(Number who participated under program funding)	4	6	10
Total	35	98	133
(Number who participated under program funding)	17	15	32

2) List

A: Lecturers

Number of lecturers: 35

See attached lectures' list

B: Participants

Number of participants: 98

See attached participants' list

8. Please describe the achievements of the seminar.

The theme of the present Asian Academic Seminar was spectroscopy, theoretical chemistry, and chemistry of materials. The scientific field of the seminar covered a wide range of molecular science, which is extended

from basic science of chemistry, physics, and biology to applied physics and chemistry. In the seminar, lectures on the structure, dynamics, and functionalities of molecules and materials have been presented by international leading scientists. The lecturers have been selected by the organizing committee by considering the subjects of the present lectures. Not only the balance of the number of lecturers of each scientific field but also that of national origin have also been considered to choose lecturers. Four lecturers from US, France, Korea, and Thailand were included in the lecturers from the Japan side. The foreign attendees have been advertised via mailing lists and have been selected based on the evaluation of CV and abstract of poster presentation. In addition, the Japan side organizing committee has encouraged professors and postdoctoral fellows to attend the AAS2015 to deepen the relationship between Japan and India. The Indian organizing committee has independently advertised the Indian attendees from the Japanese organizing committee, by evaluating the CVs and abstracts of poster presentation of applicants.

The research activities in Asian countries have grown rapidly these years. In the seminar, we have recognized that researches in Asian countries have become at the top level, and they have been playing a leading role in the molecular science community. Many stimulating discussions between/among participants with different scientific backgrounds have often been seen in the seminar. The seminar has also provided opportunities for new collaborations between researchers in different scientific fields and in Asian countries. The seminar has contributed to enhancing interactions between young Asian scientists. It is expected to create personnel network, important in the future research activities in the Asian region. As a result of the discussions on collaborations and personnel exchanges, some research institutes, for example Indian Institute of Science (IISc) and IISER Kolkata, are interested in signing memorandum on collaborative researches with Institute for Molecular Science. There is no doubt that the seminar has resulted in an important achievement in developing the interdisciplinary region in molecular science and it has been completed successfully. Finally, we would like to conclude that the seminar organized by Japan and India should be continued to facilitate the progress of science in the Asian countries.

List of Lecturers: No of lecturers: 35

Last Name	First Name	Position	Affiliated Institution	Country 1)	Remarks 2)
(Japan side)					
Enoki	Toshiaki	Prof. Emeritus	TIT	Japan	*
Iwai	Shinichiro	Prof.	Tohoku Univ.	Japan	*
Adachi	Shinichi	Prof.	KEK	Japan	*
Tominaga	Keisuke	Prof.	Kobe Univ.	Japan	*
Koshihara	Shinya	Prof.	TIT	Japan	*
Nagase	Shigeru	Senior Research Fellow	Kyoto Univ.	Japan	*
Kiguchi	Manabu	Prof.	TIT	Japan	*
Ohmine	Iwao	Director-General	IMS	Japan	*
Ehara	Masahiro	Prof.	IMS	Japan	*
Hiramoto	Masahiro	Prof.	IMS	Japan	*
Saito	Shinji	Prof.	IMS	Japan	*
Ishizaki	Akihito	Associate Prof.	IMS	Japan	*

Yamamoto	Hiroshi	Prof.	IMS	Japan	*
(India Side)					
Bhattacharyya	Kankan	Prof.	IACS, Kolkata	India	
Samanta	Anunay	Prof.	Univ. of Hyderabad	India	
Umopathy	S.	Prof.	IISc, Bangalore	India	
Sathyamurthy	N.	Prof.	IISER Mohali	India	
Bagchi	Biman	Prof.	IISc Bangalore	India	
Sebastian	K. L.	Prof.	IISc, Bangalore	India	
Chattaraj	P. K.	Prof.	IIT Kharagpur	India	
Bharadwaj	P. K.	Prof.	IIT Kanpur	India	
Natarajan	S.	Prof.	IISc Bangalore	India	
Sanyal	Milan K.	Prof.	SINP, Kolkata	India	
Bhattacharya	Santanu	Prof.	IISc, Bangalore	India	
Maitra	Uday	Prof.	IISc, Bangalore	India	
Das	Suresh	Prof.	NIIST, Thiruvananthapuram	India	
Ajayaghosh	A.	Prof.	NIIST, Thiruvananthapuram	India	
Thomas	K. George	Prof.	IISER	India	
Mukherjee	R N	Prof.	Thiruvananthapuram	India	
Goswami	Sreebrata	Prof.	IISER Kolkata	India	
Chandrasekhar	V.	Prof.	IACS Kolkata	India	
			NISER, Bhubaneswar	India	
(Others)					
Kim	Tae Kyu	Associate Prof.	Pusan National Univ.	Korea	*
Wacharasindhu	Sumrit	Assistant Prof.	Chulalongkorn Univ.	Thailand	*
Avarvari	Narcis	Prof.	Univ. of Angers	France	*
Cao	Jianshu	Prof.	MIT	USA	*

1) Country of Affiliated Institution

2) Place a check [*] in the Remark Column for those who participated using JSPS's seminar funding.

List of participants No of prticipants: 98

Last Name	First Name	Position	Affiliated Institution	Country 1)	Remarks 2)
(Japan Side)					
Kuramochi	Hikaru	Post Doctoral Researcher	RIKEN	Japan	*
Inoue	Kenichi	Post Doctoral Researcher	RIKEN	Japan	*
Okuda	Masaki	Doctoral Course Student	Kobe Univ.	Japan	*
Kawamoto	Tadashi	Assistant Prof. Master Course	TIT	Japan	*
Mukuta	Tatsuhiko	Student	TIT	Japan	
Ishikawa	Tadahiko	Assistant Prof.	TIT	Japan	*
Takagi	Yasumasa	Assistant Prof.	IMS	Japan	*

Uemura	Yohei	Assistant Prof.	IMS	Japan	*
VIJAYENDRAN	Praneeth	Post Doctoral Researcher	IMS	Japan	*
Daengngern	Rathawat	Doctoral Course Student	Nagoya Univ.	Japan	*
(India Side)					
Mondal	Somen	student	IISER, Kolkata	India	
Purkayastha	Pradipta	Dr.	IISER, Kolkata	India	
VERMA	PANKAJ	student	IIT Roorkee	India	
Devarapalli	Ramesh	student	IISER Kolkata	India	
pandey	saurabh	student	university of delhi	India	
			S. N. BOSE NATIONAL CENTRE FOR BASIC SCIENCES		
DAS	SUMAN	student		India	
khan	Md.Arif	student	MIST Bangalore	India	
Vinit	Vinit	student	IIT, Roorkee	India	
Joshi	Ankita	student	IIT, Roorkee	India	
C N	Ramachandran	Dr.	IIT, Roorkee	India	
Ghosh	Shirsendu	student	IACS	India	
Chowdhury	Rajdeep	student	IACS	India	
CHATTORAJ	SHYAMTANU	student	IACS	India	
Chowdhury	Rajdeep Sen	student	IACS	India	
Joarder	Biplab	student	IISER Pune	India	
			CSIR-Central Glass and Ceramic Research Institute		
Chattopadhyay	Shreyasi	student	CSIR-Central Glass & Ceramic Research Institute	India	
De	Goutam	Dr.		India	
Purkayastha	Pradipta	Dr.	IISER Kolkata	India	
Maity	Bholanath	student	IISER Kolkata	India	
Koley	Debasis	Dr.	IISER Kolkata	India	
			Department of Genetic Engineering and Biotechnology		
Shahik	Shah Md.	student		India	
Basu	Abhinaba	student	IISER Kolkata	India	
Reddy	Chilla Malla	Dr.	IISER Kolkata	India	
DEVARAPALLI	RAMESH	student	IISER Kolkata	India	
			Guru Nanak Dev University, Amritsar		
Sandhu	Sana	student		India	
Devarapalli	Ramesh	student	IISER Kolkata	India	
Joarder	Biplab	student	IISER Pune	India	
			Bhabha Atomic Research Centre, Mumbai		
Ghosh	Swapan K	Dr.		India	
GHOSH	SHIRSENDU	student	IACS	India	
CHATTERJEE	PIYALI	student	IACS	India	
BHATTACHARYYA	ARPAN	student	SINP	India	

Chowdhury	Bijit	student	IACS	India
Mukherjee	Saikat	student	IISER Kolkata	India
Shunmugam	Raja	student	IISER Kolkata	India
Pal	Bipul	student	IISER Kolkata	India
Ghosal	Abhisek	student	IISER Kolkata	India
Bandyopadhyay	Subhajit	student	IISER Kolkata	India
Mardanya	Sourav	student	Jadavpur University	India
Kumar Maity	Dilip	student	Jadavpur University	India
Das	Sanju	student	Jadavpur University	India
CHATTORAJ	SHYAMTANU	student	IACS	India
Ghosh	Anup	student	IISER Kolkata	India
Mukherjee	Saikat	student	IACS	India
Adhikari	Satrajit	student	IACS	India
Pratim roy	Partha	student	IIT Kanpur	India
K. Mandal	Prasun	student	IISER Kolkata	India
CHATTOPADHYAY	APARAJEO	student	IACS	India
Kayal	Abhijit	student	IIT Kanpur	India
Mondal	Dipankar	student	IIT Kanpur	India
Upendar Reddy	Gandra	student	NCL	India
Haridas Kar	Pune	student	IACS	India
Ganguly	Aniruddha	student	Calcutta University	India
Talukder	Srijeeta	student	Calcutta University	India
BANERJEE	PUJARINI	student	IACS	India
SARKAR	PIYALI	student	Calcutta University	India
Mahalingam	Venkataramanan	student	IISER Kolkata	India
Sao	Soumik	student	IISER Kolkata	India
Ghosh	Nirmalya	student	IISER Kolkata	India
Ghosh	Subhrokoli	student	IISER Kolkata	India
Sinha	Subhasis	student	IISER Kolkata	India
Kumar Gupta	Bipin	student	NPL, New Delhi	India
Nag	Pamir	student	IISER Kolkata	India
Pan	Sudip	student	IIT Kharagpur	India
Sen	Swati	student	IISER Kolkata	India
Kundagrami	Arindam	student	IISER Kolkata	India
Bhattachraya	Rupak	student	IISER Kolkata	India
Dev Mukherjee	Goutam	student	IISER Kolkata	India
Jana	Rajesh	student	IISER Kolkata	India
Das	Santu	student	IISER Kolkata	India
Basak	Sujit	student	IICB	India
Dhamija	Avinash	student	IIT	India
ABHIJIT BISWAS	Kanpur	student	IACS	India
Samanta	Subhas	student	IACS	India
CHATTERJEE	SOUMIT	student	IIT Bombay	India
(Others)				
Jusuf Oktavianto	Daniel	Under Graduate Student	Gadjah Mada Univ.	Indonesia

Pasma	Aga Satriani	Master Course Student	National Univ. of Malaysia	Malasia	
Sae-Lee	Tinnakorn	Master Course Student	Chiang Mai univ.	Thailand	
KERDPOL	KHANITTHA	Master Course Student	Chiang Mai Univ.	Thailand	
KLAHAN	JADETAPONG	Master Course Student	Chulalongkorn Univ.	Thailand	
Choopawa	Tianchai	Doctoral Course Student	Chulalongkorn univ.	Thailand	*
Sam-ang	Pornpat	Doctoral Course Student	Chulalongkorn Univ.	Thailand	*
SATTAYANON	Chanchai	Doctoral Course Student	Chiang Mai Univ.	Thailand	*
Pengsawad	Chittranuch	Master Course Student	Chulalongkorn Univ.	Thailand	
WONGSILARAT	CHOMCHANOK	Master Course Student	Chulalongkorn Univ.	Thailand	
Ashraf Uddin Muhammad	Kutub	Master Course Student	Univ. of Chittagong	Bangladesh	
Thanyada	Rungrotmongkol	Assistant Prof.	Chulalongkorn Univ.	Thailand	*
DEVULAPALLI	Amaranatha Reddy	Post Doctoral Researcher	Pusan National Univ.	Korea	*
MA	Rory	Doctoral Course Student	Pusan National Univ.	Korea	*

1) Country of Affiliated Institution

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Asian Academic Seminar 2015

Spectroscopy, Theoretical Chemistry and Chemistry of Materials,

March 5

18:30 - 19:30 Registration

March 6

MLS Hall, IACS

9:15 – 10:00 Inauguration

10:00 – 10:30 Break

10:30 – 11:05 Chairperson: Toshiaki Enoki, TIT, Japan

N. Sathyamurthy, IISER Mohali

Noncovalent Interactions and Structural Motifs in Chemistry and Chemical Biology

11:05 – 11:40 Chairperson: T K Chandrasekhar, Secretary, SERB

Shigeru Nagase, Kyoto Univ. Japan

Fullerenes Encaging Transition Metals: Interplay of Theoretical Calculations and Experiment

11:40 – 12:15 Chairperson: Keisuke Tominaga, Kobe Univ, Japan

Kankan Bhattacharyya, IACS, Kolkata

Single Molecule Spectroscopy of a Single Live Cell

12:15 – 12:50 Chairperson: Debshankar Roy, IACS, Kolkata

Janshu Cao MIT, USA

Quantum Coherent Energy Transfer in Light-harvesting Systems

- 12:50 – 14:30 Lunch
14:30 – 15:05 Chairperson: Manabu Kiguchi, TIT, Japan
R. N. Mukherjee, IISER Kolkata
Coordination Complexes with Aminophenol-based Redox-Active Ligands.
Bioinorganic and Inorganic Perspectives
15:05 – 15:40 Chairperson: Pradyut Ghosh, IACS, Kolkata
Masahiro Hiramoto, IMS, Japan
Bandgap Science for Organic Solar Cells
15:40 – 16:00 Break
16:00 – 18:30 Poster Session - I
19:45 – 21:30 Dinner

March 7 **MLS Hall, IACS, Kolkata**

- 9:00 – 9:35 Chairperson: R. Murugavel, IIT Bombay
Hiroshi M. Yamamoto, IMS, Japan
Light-Induced Superconductivity Using a Photo-Active Electric Double Layer
9:35 – 10:10 Chairperson: Shinichi Adachi, KEK Japan
Swapan K. Ghosh, BARC
Modelling Chemistry Through Density
10:10 – 10:30 Break
10:30 – 11:05 Chairperson: Satrajit Adhikary, IACS, Kolkata
Akihito Ishizaki, IMS, Japan
Impact of Environmentally Induced Fluctuations on Quantum Mechanically
Mixed Electronic and Vibrational States in Photosynthetic Energy Transfer and
2D Electronic Spectra
11:05 – 11:40 Chairperson: Masahiro Hiramoto, IMS, Japan
Suresh Das, NIIST, Thiruvananthapuram
Photoresponsive Materials
11:40 – 12:15 Chairperson: Amitava Das, NCL, Pune
Shinichiro, Iwai, Tohoku Univ, Japan
Capturing and Driving Correlated Electrons by 1.5-Cycle Strong Light Field
12:15 – 12:50 Chairperson: Hiroshi M. Yamamoto, IMS, Japan
K. George Thomas, IISER Thiruvananthapuram
Photoinduced Charge transfer with Quantum Dots: Why InP is better CdSe?
12:50 – 14:30 Lunch
14:30 – 15:05 Chairperson: N. Sathyamurthy, IISER Mohali
Shinya Koshihara, TIT, Japan
Role of the Hidden Phase in the Dynamical Process of Photoinduced Phase
Transition
15:05 – 15:40 Chairperson: Akihito Ishizaki, IMS, Japan
K. L. Sebastian, IISc, Bangalore
Fluorescence Resonance Energy Transfer to Nanoparticles, Graphen and
Carbon Nanotubes and to Chlorophylls in the Photosystem
15:40 – 16:00 Break
16:00 – 18:00 POSTER SESSION – II
18:30 – 19:45 Cultural Program
19:45 – 21:30 Dinner

March 8 **MLS Hall, IACS, Kolkata**

- 9:00 – 9:35 Chairperson: Sumrit Wacharasindhu, Chulalongkorn Univ. Thai
Santanu Bhattacharya, IISc, Bangalore
Numerous Facets of Supramolecular Gels
- 9:35 – 10:10 Chairperson: Dipak Palit, BARC, Mumbai
Narcis Avarvari, Univ. Angers, France
Helical Chirality in Tetrathiafulvalenes and Derived Materials
- 10:10 – 10:30 Break
- 10:30 – 11:05 Chairperson: Tadashi Kawamoto, TIT, Japan
Tapas Chakraborty
Light-induced homo- and heterolytic breaking of phenolic O–H bonds in molecules and clusters
- 11:05 – 11:40 Chairperson: Santanu Bhattacharya
Sumrit Wacharasindhu, Chulalongkorn Univ. Thai
Fabrication of Polydiacetylene Indicators for Humidity Sensing
- 11:40 – 12:15 Chairperson: Tadahiko Ishikawa, TIT, Japan
S. Natrarajan, SSCU, IISc, Bangalore
Metal Carboxylates: Synthesis, Structure, and Properties
- 12:15 – 12:50 Chairperson: Debabrata Goswami
Tae Kyu Kim, Pusan National Univ. Korea
Time-Resolved X-Ray Spectroscopy of Solvated Transition Metal Complexes
- 12:50 – 14:30 Lunch
- 14:30 – 15:05 Chairperson: Tadahiko Ishikawa, TIT, Japan
S. Natarajan, SSCU, Bangalore
Metal Carboxylates: Synthesis, Structure and Properties
- 15:05 – 15:40 Chairperson: S. Umamathy, IISc, Bangalore
Shinichi Adachi, KEK, Japan
CAPTURING STRUCTURAL DYNAMICS OF PHOTOCHEMISTRY BY PICOSECOND X-RAY PULSES
- 15:40 – 16:00 Break
- 16:00 – 18:30 POSTER SESSION - III
- 19:45 – 21:30 Dinner

March 9 Purbashree Auditorium, East Zone Culture Center, Salt Lake

- 9:00 – 9:35 Chairperson: Aswini Ghosh, IACS, Kolkata
Keisuke Tominaga, Kobe Univ, Japan
Terahertz Spectroscopy on Condensed Matter; Molecular Crystals and Proteins
- 9:35 – 10:10 Chairperson: Shigeru Nagase, Kyoto Univ., Japan
P. K. Bharadwaj, IIT Kanpur
Designing of Metal Organic Frameworks for Potential Applications
- 10:10 – 10:30 Break
- 10:30 – 11:05 Chairperson: Shinji Saito, IMS, Japan
Biman Bagchi, SSCU, Bangalore
Spatiotemporal Correlations in Complex Aqueous: From Spectral Difference to Spatial Resolution Through 2D-IR Vibrational Spectroscopy
- 11:05 – 11:40 Chairperson: Narcis Avarvari, Univ. Angers, France
Uday Maitra, IISc Bangalore
Enzyme Sensing on a Common Platform using Lanthanide Luminescence
- 11:40 – 12:15 Chairperson: Uday Maitra, IISc, Bangalore
Masahiro, Ehara, IMS, Japan
Bond Activation on Supported Nanocluster Catalysts

12:15 – 12:50 Chairperson: Tae Kyu Kim, Pusan National Univ. Korea
S. Umopathy, IISc, Bangalore
Photoisomerisation of trans-Stilbene-“Watching Solvent Assisted Energy Flow to Reactive Modes”

12:50 – 14:30 Lunch and

14:30 – 15:05 Chairperson: Yohei Uemura, IMS, Japan
Sreebrata Goswami, IACS, Kolkata
Redox Events in Transition Metal Complexes of Azo-aromatic Ligands:
Towards Fabrication of Chemical Catalyst and Resistive Memory

15:05 – 15:40 Chairperson: Kohta Takagi, IMS, Japan
Milan K. Sanyal, SINP, Kolkata
Unusual Crystallization of Nanomaterials on Water Surface

15:40 – 16:00 Break

16:00 – 21:30 Kolkata City Tour and Conference Dinner

March 10

IISER Kolkata

10:30 – 11:05 Chairperson: Shinji Saito, IMS, Japan
P. K. Chattaraj, IIT Kharagpur
All-metal aromaticity and conceptual DFT

11:05 – 11:40 Chairperson: P. K. Das, IISc, Bangalore
Toshiaki Enoki, TIT, Japan
Electronic Structures of Graphene Nanostructures

11:40 – 12:15 Chairperson: Samaresh Bhattacharyya, Jadavpur University
Iwao Ohmine, IMS, Japan
Water Dynamics; Fluctuation and Phases Transitions

12:15 – 13:00 Concluding Session

13:00 – 14:30 Lunch

14:30 – 16:30 Labo Tour in IISER