A Brief Report

on

Science Academies Lecture Workshop on

"Magnetic and Optical Properties of Molecular Materials: Principles and Applications"

Held during

19-21 October 2016

Organized by

Department of Chemical Sciences
Tezpur University
Napaam 784028

Science Academies Lecture Workshop

on

"Magnetic and Optical Properties of Molecular Materials: Principles and Applications"

October 19-21, 2016

Venue: Council Hall, Tezpur University

Day	Time	Programme
	9.30-11.00 am	"Basics of Linear and Nonlinear Optic Phenomena" by Prof. S. Ramasesha
	11.00-11.30 am	Tea Break
	11.30-1.00 pm	"Laser Principles and second and third nonlinear processes" by Prof. V.R. Supradeepa
	1.00-2.00 pm	Lunch Break
	2.00-3.30 pm	"Molecular Optical Devices -1" by Prof. K.L. Narasimhan
	3.30-4.00 pm	Tea Break
	4.00-5.30 pm	"Conjugated Polymers for Optoelectronic Devices -1" by Prof. Satish Patil
20/10/2016	9.00-10.30 am	"Conjugated Polymers for Optoelectronic Devices -2" by Prof. Satish Patil
	10.30-11.00 am	Tea Break
	11.00-12.30 pm	"Ultrafast Optical Sources, Techniques and Microwave Photonics" by Prof. V.R. Supradeepa
	12.30-2.00 pm	Lunch Break
	2.00-3.30 pm	"Harvesting Solar Energy -1" by Dr. Sheela K. Ramasesha
	3.30-4.00 pm	Tea Break
	4.00- 5.30 pm	"Nonlinear Optics -1" by Prof. P.K. Das
21/10/2016	9.00-10.30 am	"Basic Principles of Molecular Magnetism" by Prof. S. Ramasesha
	10.30-11.00 am	Tea Break
	11.00-12.30 pm	"Harvesting Solar Energy -2" by Prof. Sheela K. Ramasesha
	12.30-2.00 pm	Lunch Break
	2.00-3.30 pm	"Molecular Devices -2" by Prof. K.L. Narasimhan
	3.30-4.00 pm	Tea Break
	4.00- 5.30 pm	"Nonlinear Optics - 2" by Prof. P.K. Das

A science academies lecture workshop on "Magnetic and Optical Phenomena in Molecular Materials: Principles and Applications" was organized at Department of Chemical Sciences, Tezpur University during 19-21 October 2016. The joint science education panel of the science academies financial supported the lecture workshop, while the host institution, Tezpur University also contributed generously. The primary objective of the workshop was to introduce the basic principles and applications of molecular magnetic and optical materials to graduate, postgraduate and PhD levels students along with young College and University teachers. Further, the workshop provided a common platform for the interaction of young students from Tezpur university as well as from several nearby colleges with eminent academicians from leading research institutions in India.

The program involved fourteen lectures given by scientists working in the above mentioned areas. Each lecture was of 75 minutes duration while approximately fifteen minutes discussions were conducted at the end of each lecture. The speakers who delivered lectures during this workshop are Prof. S. Ramasesha (IISc, Bangalore), Prof. K. L Narasimhan (IIT Bombay, Mumbai), Prof. P. K. Das (IISc, Bangalore), Prof. Satsh Patil (IISc, Bangalore), Dr. Sheela Ramasesha (IISc, Bangalore), and Dr. V. R. Supradeepa (IISc, Bangalore). The lectures by all the spearkers primarily aimed at applying basic concepts to understand electronic and magnetic properties of import, in materials and devices and their design strategies. A total of 129 participants from Tezpur University (Chemical Sciences, Physics, Energy and Mechanical Engineering Departments) and from several other institutions from different parts of Assam e.g. Darrang College (Tezpur), J. B. College (Jorhat), Digboi College (Digboi), Cotton College State University (Guwahati) attended the lecture workshop.

The lecture workshop commenced at 9.00 AM on 19th October 2016 at the Council Hall of Tezpur University. Coordinator of the workshop, Dr. Nayanmoni Gogoi welcomed all the speakers and participants to the lecture workshop and earnestly requested for their cooperation and active participation to make the programme a successful event. Thereafter, Prof. S. Ramasesha, Convener of the workshop addressed the gathering to explain the motivation and objectives of the workshop. Further, Professor Ramasesha introduced all the eminent speakers who are going to deliver lectures during the workshop along with a brief description of their area of interest. Finally the head of the Chemical Sciences Department, Prof. A. J. Thakur gave a

brief introduction of the department along with its recent achievement to the participants. Finally, Prof. Mihir K. Chaudhuri, Vice-Chancellor of Tezpur University expressed his pleasure on organization of the science academies lecture workshop at Tezpur and advised the students to actively participate in the workshop.

The first lecture of the day titled "Basics of Linear and Non-linear Optical Phenomena" was delivered between 9.30-11 AM by Prof. S. Ramasesha, Solid State and Structural Chemistry Unit, IISc Bangalore. Prof. Ramasesha introduced the basic concepts involving the linear and non-linear optical phenomena and also established several mathematical principles governing both of these two phenomena's. Prof. Ramasesha elaborated how the density matrix renormalization group method for obtaining ground and low lying excited states of model systems can be extended to obtain accurate dynamical linear and non-linear optic coefficients.

The second lecture on day 1 of the lecture workshop was delivered by Dr. V. R. Supradeepa, Center for Nanoscience and Engineering, IISc. Bangalore on "Laser Principles and Second & Third Non-linear Processes". Dr. Supradeepa elaborated the basic principles behind the generation of laser beams of specific frequency and their applications in modern technology. Based on these concepts, Dr. Supradeepa further described how nonlinear optical materials have a nonlinear response to the electric field associated with the light of a laser beam, leading to a variety of optical phenomena such as the generation of new light frequencies or the alteration of the material's optical properties.

The lecture workshop resumed after a short lunch break between 1.00-2.00 PM. The third lecture of the day was delivered by Prof. K. L. Narasimhan, IIT Bombay on "Molecular Optical Devices". Professor Narasimhan initially introduced the participants to the basic principles of electronic emission spectroscopy and their applications in fabricating modern optical devices. Thereafter, Professor Narasimhan showed how emission characteristics of molecular species can be modulated to generate optical devices of desired properties.

The last lecture of the day commenced at 4.00 PM and it was delivered by Prof. Satish Patil, Solid State and Structural Chemistry Unit, IISc., on "Conjugated Polymers for Optoelectronic Devices". Professor Patil initially elaborated the concept of conducting polymers and their key characteristics. Thereafter, Professor Patil discussed about different routes for

synthesis of both conducting & semiconducting polymers of desired properties and their applications in building electronic devices.

The lecture workshop resumed at 9.00 AM on day 2 (20/10/16) and the first lecture of the day was delivered by Prof. Satish Patil, Solid State and Structural Chemistry Unit, IISc., on "Conjugated Polymers for Optoelectronic Devices". Professor Patil extended the topics discussed in his first lecture on the earlier day and elaborated different synthetic strategies to construct organic molecules with desired optoelectronic characteristics for application in devices. Professor Patil also suggested that conducting polymers can be possibly used as an alternative to transparent indium tin oxide conductor in organic solar cells, organic light emitting diodes, supercapcitors and sensors etc.

After a short tea break, the next lecture of the day began at 11.00 AM and it was delivered by Dr. V. R. Supradeepa, Center for Nanoscience and Engineering, IISc. Bangalore on "Ultrafast Optical Sources, Techniques and Microwave Photonics". Based on the topics discussed in his last lecture, Dr. Supradeepa explained how conventional fiber laser technology can be augmented by stimulated Raman scattering can provide scalable high power lasers in a wide range of wavelengths. He further went on to elaborate how ultrafast optical sources which can generate femtosecond laser pulses can be integrated from continuous wave lasers by using electro-optical nonlinearities with non-linear fiber optics.

After lunch break, the third lecture of the second day began at 2.00 PM and it was delivered by Dr. Sheela K. Ramasesha on "Harvesting Solar Energy". Dr. Ramasesha raised her concern on the worldwide dependence on fossil fuels and emphasized on the solar energy harvesting as a renewable and environment friendly source of energy. Dr. Ramasesha also described different types of solar panels currently available and their efficiencies. She also described about her research groups ambitious project of installing solar panels on the roof of trains as a renewable and sustainable source of energy available to passengers.

The final lecture of the second day was delivered by Prof. Pushpendu K. Das, Inorganic and Physical Chemistry Department, IISc., Bangalore on non-linear optics. Prof. Das described the origin of non-linear optical properties in organic systems and how the key characteristics of these materials can be modulated by structural modifications. He also elaborated the important

aspects which should be present for obtaining highly efficient non-linear optical materials and the importance of electron donating as well as electron withdrawing functional groups in devising such materials.

The first lecture of the final day (21/10/2016) was delivered by Prof. S. Ramasesha on molecular magnetic materials. Prof. Ramasesha introduced the basic concepts and equations involved in magnetism and went on to establish their significance in predicting key magnetic exchange phenomena e.g. ferromagnetism, antiferromagnetism etc. Finally, based on these concepts he introduced the concept of single molecule magnetism and their applications in fabricating miniature electronic storage devices.

The next lecture was delivered by Dr. Sheela Ramasesha on solar energy harvesting. Dr. Ramasesha described different types of semiconducting materials used in fabricating solar panels used for solar energy conversion and their efficiencies. She shared the experience of her research group in developing solar lights across the country and feedback of customers using these devices.

After a short lunch break, the third lecture of the day was delivered by Prof. K. L. Narasimhan on Molecular Devices. Prof. Narasimhan. Based on the topics introduced during his first lecture on first day of the lecture workshop, Prof. Narasimhan went on to describe different kinds of materials used in fabricating optical devices and how their efficiencies can be easily modulated by subtle modifications of their structure. He elaborated insightful structure-property correlations for engineering molecular optical devices which can be used for varied applications.

The last lecture of the workshop was delivered by Prof. P. K. Das on non-linear optical properties of molecular systems. Prof. Das extended the topics discussed during his first lecture on the previous day and elaborated second harmonic generation, an even-order nonlinear optical effect in systems without inversion symmetry. He spoke extensively on non-linear optical properties of extended one-dimensional conjugated organic systems and nano-particles. Prof. Das also provided theoretical insights into the non-linear optical properties of such systems and spoke about his research group's fruitful collaboration with Prof. Ramasesha's group which resulted in some highly rated research publications.

After the conclusion of all the lectures, a brief valedictory session was held. Prof. Ramasesha expressed his pleasure on the lively participation of the students during all the lectures of the workshop and elaborated the importance of conducting such lecture workshops at remote locations like Tezpur University. Thereafter, several students expressed their feedback on the lecture workshop and thanked the speakers for enlightening them on a varied range of topics. Finally, the convener of the workshop, Dr. Nayanmoni Gogoi thanked the speakers for taking the trouble to travel upto Tezpur and deliver lectures, Science Academies for generously funding the workshop and students for actively participating in the lecture workshop.

Few Glimpses of the Lecture Workshop

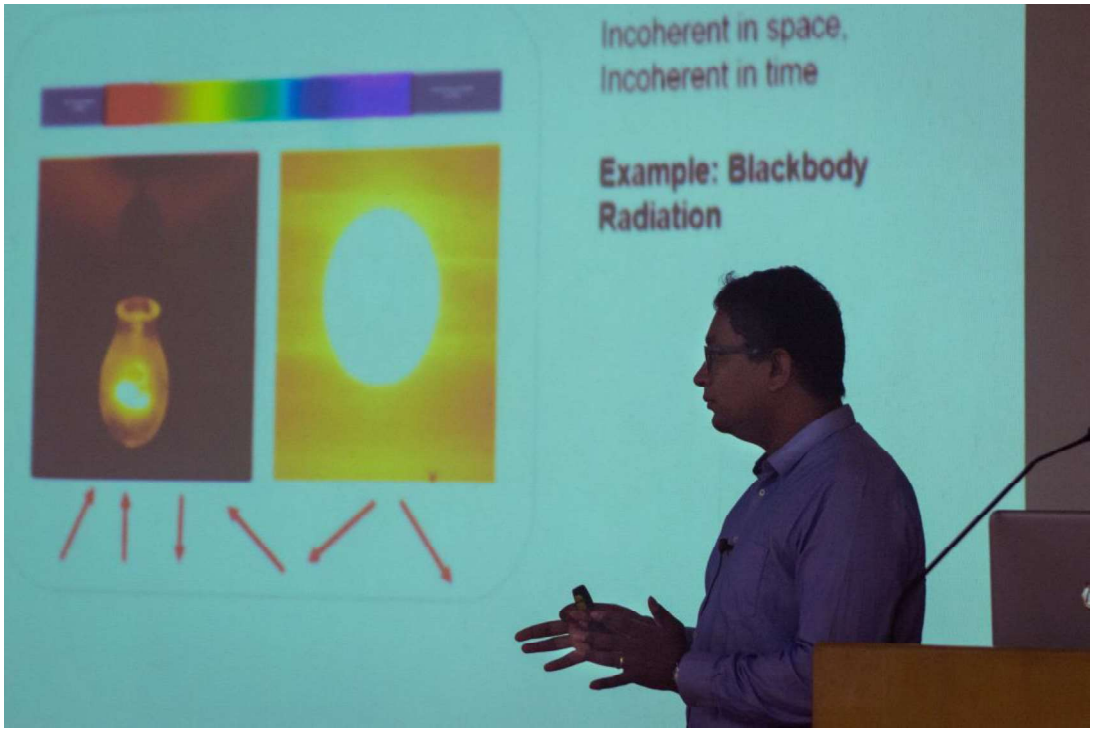
Prof, Mihir K. Chaudhuri, Vice-Chancellor, Tezpur University addressing the gathering on day one.

A group photo taken during the lecture workshop

Participants listening to a lecture during the workshop

Prof. K. L. Narasimhan delivering a lecture during the workshop

Prof. Satish Patil delivering a lecture during the workshop



Dr. V. Supradeepa delivering a lecture during the workshop

Dr. Sheela Ramasesha delivering a lecture during the workshop

List of Participants				
Sl no	**Name**	**Institute**	**Course Enrolled**	**Faculty/Student**
1.	Madhurya Kakati	Chemical Sciences, Tezpur University	M. Sc.	Student
2.	Bikoshita Porashar	Chemical Sciences, Tezpur University	M. Sc.	Student
3.	Queen Das	Chemical Sciences, Tezpur University	M. Sc.	Student
4.	Nazia Farnaz	Chemical Sciences, Tezpur University	M. Sc.	Student
5.	Susri Karuna Devi	Chemical Sciences, Tezpur University	M. Sc.	Student
6.	Ashish Kumar Mazumdar	Chemical Sciences, Tezpur University	M. Sc.	Student
7.	Ritumoni Deka	Chemical Sciences, Tezpur University	M. Sc.	Student
8.	Partha pratim Churi	Chemical Sciences, Tezpur University	M. Sc.	Student
9.	Bibhuti Bhusan Lara	Chemical Sciences, Tezpur University	M. Sc.	Student
10.	Anjal Dutta	Chemical Sciences, Tezpur University	M. Sc.	Student
11.	Biplop Chetia	Chemical Sciences, Tezpur University	M. Sc.	Student
12.	Darshana Bordoloi	Chemical Sciences, Tezpur University	M. Sc.	Student
13.	Sanjib Thakuria	Chemical Sciences, Tezpur University	M. Sc.	Student
14.	Dipangkali Sarma	Chemical Sciences, Tezpur University	M. Sc.	Student
15.	Ashim Jyoti Thakur	Chemical Sciences, Tezpur University	M. Sc.	Student

16.	Jyotirmoi Hajong	Chemical Sciences, Tezpur University	M. Sc.	Student
17.	Mubin Ul Hanif	Chemical Sciences, Tezpur University	M. Sc.	Student
18.	Sourav Kumar Haloi	Chemical Sciences, Tezpur University	M. Sc.	Student
19.	Dhurava Jyoti Lahkar	Chemical Sciences, Tezpur University	M. Sc.	Student
20.	Hrishikesh Bardalai	Chemical Sciences, Tezpur University	M. Sc.	Student
21.	Afjalur Rahman	Chemical Sciences, Tezpur University	M. Sc.	Student
22.	Debasish Sarmah	Chemical Sciences, Tezpur University	M. Sc.	Student
23.	Abinash Tiwari	Chemical Sciences, Tezpur University	M. Sc.	Student
24.	Manash Jyoti kalita	Chemical Sciences, Tezpur University	M. Sc.	Student
25.	Subhom Sahoo	Chemical Sciences, Tezpur University	M. Sc.	Student
26.	Paban Mandi	Chemical Sciences, Tezpur University	M. Sc.	Student
27.	Sumit Phayel	Chemical Sciences, Tezpur University	M. Sc.	Student
28.	Rabu Ranjan Changmai	Chemical Sciences, Tezpur University	M. Sc.	Student
29.	Pallab Karjee	Chemical Sciences, Tezpur University	M. Sc.	Student
30.	Ankit Sahoo	Chemical Sciences, Tezpur University	M. Sc.	Student

31.	Monuranjan Konwar	Chemical Sciences, Tezpur University	M. Sc.	Student
32.	Rajdikshit Gogoi	Chemical Sciences, Tezpur University	M. Sc.	Student
33.	Himanshu Sharma	Chemical Sciences, Tezpur University	M. Sc.	Student
34.	Parthapratim Barman	Chemical Sciences, Tezpur University	M. Sc.	Student
35.	Ankita Das	Chemical Sciences, Tezpur University	M. Sc.	Student
36.	Trishna Dutta	Chemical Sciences, Tezpur University	M. Sc.	Student
37.	Susmita Nath	Chemical Sciences, Tezpur University	M. Sc.	Student
38.	Priyanka Adhikari	Chemical Sciences, Tezpur University	M. Sc.	Student
39.	Suravi Paul	Chemical Sciences, Tezpur University	M. Sc.	Student
40.	Kalyani Narah	Chemical Sciences, Tezpur University	M. Sc.	Student
41.	Himashree Sandhya Goswami	Chemical Sciences, Tezpur University	M. Sc.	Student
42.	Prantika Bhattacharjee	Chemical Sciences, Tezpur University	M. Sc.	Student
43.	Sukanya Das	Chemical Sciences, Tezpur University	M. Sc.	Student
44.	Rashmi Sengupta	Chemical Sciences, Tezpur University	M. Sc.	Student
45.	Gitashree Choudhury	Chemical Sciences, Tezpur University	M. Sc.	Student

46.	Dikshita Dowerah	Chemical Sciences, Tezpur University	M. Sc.	Student
47.	Nibedita Sarkar	Chemical Sciences, Tezpur University	M. Sc.	Student
48.	Priyanka Doley	Chemical Sciences, Tezpur University	M. Sc.	Student
49.	Hiya Talukdar	Chemical Sciences, Tezpur University	M. Sc.	Student
50.	Himasri Lahkar	Chemical Sciences, Tezpur University	M. Sc.	Student
51.	Nishant Biswakarma	Chemical Sciences, Tezpur University	M. Sc.	Student
52.	Niharika Kashyap	Chemical Sciences, Tezpur University	M. Sc.	Student
53.	Hridip Ranjan Sarma	Chemical Sciences, Tezpur University	M. Sc.	Student
54.	Niranjan Ligira	Chemical Sciences, Tezpur University	M. Sc.	Student
55.	Sudhangshu Priya Bharati	Chemical Sciences, Tezpur University	M. Sc.	Student
56.	Sandeep Das	Chemical Sciences, Tezpur University	M. Sc.	Student
57.	Naba Bhargab Das	Chemical Sciences, Tezpur University	M. Sc.	Student
58.	Priyakshi Sharma	Chemical Sciences, Tezpur University	M. Sc.	Student
59.	Indrani Sharma	Chemical Sciences, Tezpur University	M. Sc.	Student
60.	Gorishmita Borah	Chemical Sciences, Tezpur University	M. Sc.	Student
61.	Raj Shekhar Roy	Chemical Sciences, Tezpur University	M. Sc.	Student

62.	Aridom Bikash Neog	Chemical Sciences, Tezpur University	M. Sc.	Student
63.	Dipjyoti Bora	Chemical Sciences, Tezpur University	M. Sc.	Student
64.	Dipankar Thakuria	Chemical Sciences, Tezpur University	M. Sc.	Student
65.	Preetima Changmai	Chemical Sciences, Tezpur University	M. Sc.	Student
66.	Anindita Lahkar	Chemical Sciences, Tezpur University	M. Sc.	Student
67.	Debanga Bhausan Bora	Chemical Sciences, Tezpur University	M. Sc.	Student
68.	Bijoy Ghosh	Chemical Sciences, Tezpur University	M. Sc.	Student
69.	Subharajyoti Ghosh	Chemical Sciences, Tezpur University	M. Sc.	Student
70.	Debabrat Pathak	Chemical Sciences, Tezpur University	M. Sc.	Student
71.	Manash Pratim Upadhyaya	Chemical Sciences, Tezpur University	M. Sc.	Student
72.	Himanshu Pratim Bhattacharyya	Chemical Sciences, Tezpur University	M. Sc.	Student
73.	Diptajyoti Gogoi	Chemical Sciences, Tezpur University	M. Sc.	Student
74.	Subhamoy Mukhopadhyay	Chemical Sciences, Tezpur University	M. Sc.	Student
75.	Suman Lahkar	Chemical Sciences, Tezpur University	M. Sc.	Student

76.	Rajashree Bortamuly	Chemical Sciences, Tezpur University	M. Sc.	Student
77.	Subahnkar Rakhit	Chemical Sciences, Tezpur University	M. Sc.	Student
78.	Geetali Sonowal	Chemical Sciences, Tezpur University	M. Sc.	Student
79.	Bikash Kumar Das	Chemical Sciences, Tezpur University	M. Sc.	Student
80.	Upen Bora	Chemical Sciences, Tezpur University	M. Sc.	Student
81.	Trisha Kaushik	Chemical Sciences, Tezpur University	Research Scholar	Student
82.	Anurag	Chemical Sciences, Tezpur University	Research Scholar	Student
83.	Mamon Dey	Chemical Sciences, Tezpur University	Research Scholar	Student
84.	Suchibrata Borah	Chemical Sciences, Tezpur University	Research Scholar	Student
85.	Bagmita Bhattacharyya	Chemical Sciences, Tezpur University	Research Scholar	Student
86.	Prashurjya Pritam Mudoi	Chemical Sciences, Tezpur University	Research Scholar	Student
87.	Shivanee Borpatra Gohain	Chemical Sciences, Tezpur University	Research Scholar	Student
88.	Barsha Ritu Goswami	Chemical Sciences, Tezpur University	Research Scholar	Student
89.	Bedanta Pratim Ma	Chemical Sciences, Tezpur University	M. Sc.	Student
90.	Ridip Das	Chemical Sciences, Tezpur University	M. Sc	Student
91.	Arju Gogoi	Department of Chemistry, Digboi College		
92.	Arpita Saikia	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
93.	Ashawari Dewri	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
94.	Bhagyashree Kakaty	Department of Chemistry, Cotton College	M. Sc.	Student
95.	BIKASH HANDIQUE	Department of Chemistry, Cotton College	M. Sc.	Student

96.	Bishal Paul	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
97.	Dimpi Talukdar	Department of Chemistry, Cotton College	M. Sc.	Student
98.	dipen sarmah	T.H.B.College	M. Sc.	Student
99.	Dunasmita Gogoi	Department of Physics, Tezpur University	M. Sc.	Student
100.	Emee Das	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
101.	Ferina Das	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
102.	Himangshu Sekhar Sarmah	Dept. of Physics, J.B.College, Jorhat		Student
103.	Jayanta Bora	Dept. of Env. Sc, Tezpur University	Technical Assistant	Technical staff
104.	Jishnu Bora	Department of Chemistry, Cotton College	M. Sc.	Student
105.	Kashmiri Baruah	Department of Physics, Tezpur University	Research Scholar	Student
106.	Kaushik Borthakur	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
107.	Leena Sharmah	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
108.	Manish Raj Jaishy	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
109.	Manisha gogoi	Department of Chemistry, Cotton College	M. Sc.	Student
110.	Meenakshi Talukdar	Department of Physics, Tezpur University	M. Sc.	Student
111.	Nayanika Sarker	Department of Chemistry, Cotton College	M. Sc.	Student

112.	Pallabi Chakravorty	Dept. of Physics, J.B.College, Jorhat	B.Sc.	Student
113.	Pranjal Bhuyan	Department of Chemistry, Cotton College	M. Sc.	Student
114.	Pranjal Pratim Das	Department of FET, Tezpur University	M. Tech 3rd sem	Student
115.	Pronob Bora	Department of Chemistry, Digboi College	B.Sc.	Student
116.	Rachita Newar	Deptt. Of Chemistry, Darrang College	B. Sc.	Student
117.	Rahul kumar	Mechanical Engineering, Tezpur University	M Tech 1st sem	Student
118.	Sharanga Pulak Dolakashoria	Dept. of Physics, J.B.College, Jorhat		Faculty
119.	Snigdha Saikia	Department of Chemistry, Cotton College	M. Sc.	Student
120.	Sobit Newar	Department of Chemistry, Digboi College		
121.	Sushant Kumar Behera	Department of Physics, Tezpur University	Research Scholar	Student
122.	Swaraj Pathak	Dept. Of Chemistry, Darrang College	B. Sc.	Student
123.	Trisha Chatterjee	Dept. Of Chemistry, Darrang College	B. Sc.	Student
124.	Wahida Rahman	Dept. of Physics, J.B.College, Jorhat	B.Sc.	Student
125.	Nabin Sarmah	Dept. of Energy, Tezpur Univrsity		Faculty
126.	Suprabh Saurabh Bordoloi	Dept. Of Chemistry, Darrang College,	B.Sc.	
127.	Pankaj Hazarika	Darrang College, Tezpur		Faculty
128.	Ajanta Deka	Girijananda Institute of Management and Technology, Guwahati		Faculty

15/2/202

Prof. & Head
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TEZPUR UNIVERSITY

Head

15/2/2

Associate Professor
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Tezpur - 784028

(Coordinator)

Science Academies Lecture Workshop

On

Magnetic and Optical Properties of Molecular Materials: Principles and Applications

October 19 - 21, 2016

Organized by:

Department of Chemical Sciences
Tezpur University
Napaam-784028, Assam

Sponsored by

IASc **INSA** **NASI**

Speakers

Professor K. L. Narasimhan,
IIT Bombay, Mumbai

Professor P. K. Das,
IISc, Bengaluru

Dr. Sheela K. Ramasesha,
IISc, Bengaluru

Professor Satish Patil,
IISc, Bengaluru

Dr. V. R. Supradeepa,
IISc, Bengaluru

Professor S. Ramasesha,
IISc, Bengaluru

How to apply

University/college teachers and students at post graduate and research level are invited to apply for participation.

Please write to the coordinator giving your educational qualifications, address for communication, mobile number & e-mail address to the workshop coordinator by post/ e-mail on or before **10th October, 2016**.

No TA/DA will be provided to the participants.

Coordinator
Dr. Nayanmoni Gogoi
Dept. of Chemical Sciences
Tezpur University,
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Phone: 03712 275065;
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Indian Academy of Sciences

The *Indian Academy of Sciences* (IASc), Bangalore was founded in 1934 by C. V. Raman. Its objectives include promoting the progress of science in pure and applied branches. Major activities include organizing meetings for discussions on important topics, publication of scientific journals, recognizing scientific talent, improvement of science education and taking up other issues of concern to the scientific community.

Indian National Science Academy

The *Indian National Science Academy* (INSA), New Delhi founded in 1935 is a premier science academy in the country, INSA plays crucial role in promoting, recognizing and rewarding excellence.

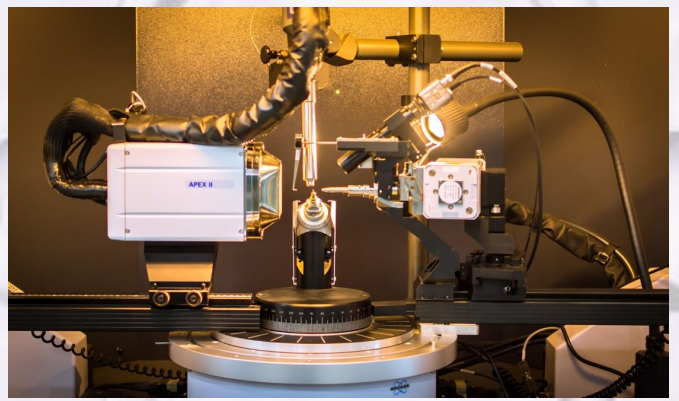
National Academy of Sciences

The *National Academy of Sciences* (NASI), Allahabad was founded in 1930. The main objective of the academy is to provide a national forum for the publication of research work carried out by Indian scientists.

Tezpur University

Tezpur University (TU) was established by an Act of Parliament in 1994. The main objective of this Central University is to offer courses and promote research in areas which are of special and direct relevance to the region and in emerging areas in Science and Technology.

TU was conferred Visitors Best University 2016 award and was accredited with "A" Grade by **NAAC.**



Objectives of the Workshop

The aim of the proposed workshop is to introduce the basic concepts in magnetism such as exchange mechanisms, cooperative magnetic phenomena, single molecule and molecular magnets. In the realm of optical properties topics such as light-matter interaction, electron states in molecules and polymers, linear and nonlinear optical phenomena, electronic processes in devices will be covered. There will also be talks on molecular electronic devices, synthesizing polymers for niche applications and harnessing solar energy through photovoltaics.

Topics to be covered

1. Light-matter interactions. Introduction to Light sources and time resolved spectroscopies.

2. Origin of magnetic forces. Classification of Magnetic Materials. Magnetic Exchange and Molecular Magnetism.

3. Nonlinear Optic Phenomena in molecular materials.

4. Molecular Optical Devices.

5. Synthetic strategies for device molecules.

6. Harvesting solar energy.