

A Brief Report
on
Science Academies Lecture Workshop on
“Emerging Trends in Chemical Sciences”

Held during
11-13 November 2016

Organized by
Department of Chemical Sciences
Tezpur University
Napaam 784028

Science Academies Lecture Workshop on “**Emerging Trends in Chemical Sciences**” was organized by Department of Chemical Sciences, Tezpur University in cooperation with Indian Academy of Sciences (IASc), Bangalore; Indian National Science Academy (INSA), New Delhi; The National Academy of Sciences (NASI), Allahabad during November 11-13, 2016. The three day workshop was addressed by Prof. Mihir K. Chaudhury, Vice Chancellor, Tezpur University as patron along with Prof. M. Palaniandavar, Department of Chemistry, Bharathidasan University as convener.

To enhance the knowledge, to promote the scientific temper and education and to highlight the current trends and issues in the field of research in chemical sciences were the foremost objectives of the workshop. Graduate, post-graduate and research scholars from different domains of science were supposed to be the major participants for this event. Regarding this, the organizing committee has invited speakers from different disciplines in the field of chemical sciences along with the students from host university and nearby colleges and/or universities to attend the lecture series.

The workshop was comprised with 153 participants, including 12 from Dept. of Chemistry, Kaziranga University, Jorhat; Dept. of Chemistry, Gauhati University and the rest were from different departments of Tezpur University along with Dept. of Chemical Sciences.

A total of 13 lectures by 7 speakers cover different domains of chemical sciences that includes organic, inorganic, bio-inorganic, nano-science and green chemistry. The duration of the lectures was 90 minutes with 15 minutes for discussion. The first and third day had 4 lectures whereas 5 lectures in the day second. The list of speakers and their presentations were-

Sl.No.	Speakers	Area	Topics
1	Prof. B.C. Ranu, FASc, FASc Indian Association for the Cultivation of Science, Kolkata	Green Chemistry	Lecture 1: Green Concepts in Metal Catalysis Lecture 2: Ball Milling and Visible Light-Emerging Green Tools in Chemical Transformation
2	Prof. P Ghosh, FASc Indian Association for the Cultivation of Science, Kolkata	Inorganic Chemistry (Supramolecular Chemistry)	Lecture 1: Recognition of Anions and Its Potential Applications. Lecture 2: Chemical sensing and Molecular Mechines
3	Prof. R. Murugavel FASc, FRSC, Department of Chemistry Indian Institute of Technology Bombay, Mumbai	Inorganic Chemistry	Lecture 1: 100 years of Chemical Bond Lecture 2: Evolution of Porous Solid
4	Prof. Arun Chattopadhyay, FASc, FRSC Dept. of Chemistry & Centre for Nanotechnology Indian Institute of Technology, Guwahati	Nano Science	Lecture 1: Complexation Reaction Involving Nanoscale Particles Lecture 2: Transforming Nano science to Nano technology
5	Prof. T. Punniyamurthy FASc, FRSC, Department of Chemistry Indian Institute of Technology Guwahati, Guwahati	Organic Chemistry	Lecture 1: Regioselective C-H Functionalization and Carbon- Heteroatom Bond Formation Lecture 2: Domino Strategies for the Synthesis of Medicinally Important Heterocycles.
6	Prof. M. Palaniandavar, INSA Honorary Scientist, FNA, FASc, FRSC; Department of Chemistry, Bharathidasan University, Tiruchirapalli	Bio-Inorganic	Lecture 1: Structure and Function of Metallobiomolecules. Lecture 2: Metal Complexes as Probes for DNA structure and conformation and Metal Based Anticancer Drug Development.
7	Dr. M. Velusamy Dept. of Chemistry North-Eastern Hill University, Shillong	Inorganic Chemistry	Metal-Free Organic Dye for Dye sensitized Solar Cells(DSSC): An Overview

The first technical session of the day one was started with the welcome speech of Prof. Ashim J. Thakur, Head of the Department Chemical Sciences, Tezpur University, followed by felicitation of the guest. The programme was started with the keynote address by Prof. M. Palaniandavar briefing the importance of the lecture series with highlighting the aims to promote the basic science. He welcomed all the experts and resource persons and the students of the visiting universities before inviting the Vice-Chancellor for giving the opening remarks. The technical session of the workshop is outlined below-

Day 1, 11th November, 2016

Chairpersons:

The following professors chaired the technical sessions:

Session I- Prof. M. Palaniandavar, Department of Chemistry, Bharathidasan University

Session II- Prof. P. Ghosh, Indian Association for the Cultivation of Science, Kolkata

Session III- Prof. B.C. Ranu, Indian Association for the Cultivation of Science, Kolkata

Invited Speakers

The workshop was started with the following speakers who delivered their lectures during the session. The details of their presentation along with the names and affiliations are described below.

1. Prof. B.C.Ranu, IACS, Kolkata

Prof. B.C. Ranu delivered his first lecture on the concept of green chemistry and its application in metal catalysis. He introduced the term “Green Chemistry” along with description of the principles associated with it. He emphasized the concept of hazardous solvent free application, cost efficiency and the recyclability of the catalyst, achievable through green

chemistry. Moreover, he explained the environment friendly aspects of green chemistry with suitable and remarkable examples of chemistry.

During his second lecture he introduced a suitable green tool for chemical transformation i.e. Ball Milling and Visible light. Ball millings are the sophisticated grinding machines that are used for organic synthesis. He highlighted the advantages of Ball Milling as it can be used for both metal free and metal mediated chemical reactions. In his lecture, he pointed out the greener applicability of this tool in efficient mixing of reagents that makes reactions solvent free. In the other context he explained the use of sun light as a source of energy for chemical reactions that involves free radical intermediate. Moreover he aroses the disadvantages of using sunlight and hence considered Blue LED (Light Emitting Diode) as an alternative tool, due to its solvent free nature and as it metal free catalysis.

2. Prof. P. Ghosh, IACS, Kolkata

The lecture on “Recognition of anions and its potential applications” by Prof. P. Ghosh was divided into two parts i.e. Supramolecular chemistry- basically chemistry beyond molecules and Anion recognition and its relevance in Health and Environment. In his first part he introduced the concept of supramolecular chemistry, a field beyond the molecular chemistry, based on non-covalent interactions. He added about the interdisciplinary nature that covers the chemical, physical and biological features of chemical species and gave a historical description about the evolution of the supramolecular chemistry.

In the context of his second lecture he brought to the limelight about the importance of the anion chemistry. He summarized the importance of anion chemistry in health related issues, nuclear waste management and also on environmental issues.

Day 2, 12th November, 2016:

Chairpersons:

The following professors chaired the technical sessions:

Session I- Prof. M. Palaniandavar, Department of Chemistry, Bharathidasan University

Session II- Prof. Arun Chattopadhyay, Dept. of Chemistry & Centre for Nanotechnology IITG, Guwahati

Session III- Prof. N. S. Islam, Department of Chemical Sciences, Tezpur University

Invited Speakers

1. Prof. Arun Chattopadhyay, Dept. of Chemistry & Centre for Nanotechnology, IITG, Guwahati

Prof. Arun Chattopadhyay had delivered two lectures on the complexation reactions of Nano particles and Nano technology. In his introduction he explained the terminology of the subject along with fundamentals of Nano sciences. He discussed the different domains of synthesis, fabrications and characterizations of Nano particles along with complexation reactions. Moreover, the speaker had delivered the merits and demerits of the Nano scale particles along with the wide applications of these in the field of nano technology.

2. Prof. M. Palaniandavar, Department of Chemistry, Bharathidasan University, Tiruchirapalli

Prof. M. Palaniandavar presented two lectures on the field of Metallobiomolecules. In his lecture he discussed about the structure and function of metallobiomolecules. He briefly discussed the important roles of the biomolecules in biological activity with the metals. He added about the absorption of radiant energy by plants and synthesizing of the carbohydrates in presence of carbon dioxide. He explained the process of oxidation and reduction reactions that took place in the photo system along with the descriptions of certain metallobiomolecules. He

also covered the chemistry of Copper, including structural changes of the copper complexes in this discussion.

3. Dr. Dr. M. Velusamy, Dept. of Chemistry, North-Eastern Hill University, Shillong

The presentation of Dr. Dr. M. Velusamy was about the Dye sensitized Solar Cells (DSSC). During the presentation he discussed about the term, characteristics, advantages /disadvantages of the solar energy. Moreover, the definition, types, principles, applications and advantages/disadvantages of DSSC was discussed. The concepts of photo sensitizer along with the topic of organic solar cells were also mentioned briefly in his talk.

Day 3, 13th November, 2016:

Chairpersons:

The following professors chaired the technical sessions:

Session I- Prof. M. Palaniandavar, Department of Chemistry, Bharathidasan University

Session II- Prof. R. Murugavel, Department of Chemistry, IITB, Mumbai

Session III-Prof. T. Punniyamurthy, Department of Chemistry, IITG, Guwahati

Invited Speakers

1. Prof. R. Murugavel, Department of Chemistry, IITB, Mumbai

The lecture on “100 years of Chemical Bond” by Prof. R. Murugavel was one of the significant talks of the workshop. He explained the 100 years of glorious journey (from 1916 to 2016) of “electron pair bond”, proposed by G.N. Lewis. He mentioned the key papers of G.N. Lewis from the years of 1913, 1916 and 1923, and discussed how Lewis started the electronic structure revolution in chemistry. Moreover, he explained the journey of the term of the chemical bond from the Lewis “electron pair bonding” to Langmuir “covalent bond”.

2. Prof. T. Punniyamurthy, Department of Chemistry, IITG, Guwahati

Prof. T. Punniyamurthy delivered his presentation on Regioselective C-H functionalization and Carbon-Heteroatom bond formation. He presented various examples of Cross-dehydrogenative coupling (CDC) reactions. Moreover, the speaker mentioned about the synthesis, merits and demerits of the biologically important benzofused azoles. He discussed the importance of use of copper oxide nanoparticle in the synthetic routes of Carbon-Hetero atom bond formations along with the advantages. C-H functionalization, Radical scavenger experiment, Chelation assisted C-H functionalization of different oxazolidines and its derivatives were the covered area of his discussion.

This was followed by the feedback session, where the speakers, participants from the universities expressed their views about the Lecture Workshop. The participants expressed their sincere greetings to the organizing committee for arranging such an important event, also thanked for their hospitality and expressed their willingness to attend more such lectures in near future.

The Valedictory sessions was addressed by Prof. M. Palaniandavar, convener where he advised the participants to utilize the available opportunities and appreciated for their interests in the workshop. Prof. N. S. Islam, Coordinator, expressed her sincere greetings and thanked all the speakers, participants for making the event successful. Finally the sincere vote of thanks was delivered by Dr. Nayanmoni Gogoi, Co-coordinator, to all the invited speakers, participants, and the volunteers. He congratulated all for their interest, efforts and hard work for successful conduct of the workshop. The three day workshop was finally concluded by the distributions of certificates among the all the speakers and participants.

Schedule of the Workshop

Friday, 11th November, 2016	
8:30 am- 9:00 am	Registration
9:00 am- 9:30 am	Inauguration
Session I	Chair person: Prof. M. Palaniandavar,
9:30 am-11:00 am	Prof. B.C. Ranu Lecture 1: Green Concepts in Metal Catalysis
11:00 am-11:30 am	Tea
Session II	Chair person: Prof. P. Ghosh
11:30 am-1:00 pm	Prof. B.C. Ranu Lecture 2: : Ball Milling and Visible Light-Emerging Green Tools in Chemical Transformation
1:00 pm-2:00 pm	Lunch
Session III	Chair person: Prof. B.C. Ranu
2:00 pm-3:30 pm	Prof. P Ghosh Lecture 1: Recognition of Anions and Its Potential Applications.
3:30 pm-4:00 pm	Tea Break
4:00 pm- 5:30 pm	Prof. P Ghosh Lecture 2: Chemical sensing and Molecular Mechines
Saturday, 12th November, 2016	
Session I	Chair person: Prof. M. Palaniandavar,
9:00 am-10:15 am	Prof. Arun Chattopadhyay Lecture 1: Complexation Reaction Involving Nanoscale Particles
10:15 am-11:30 am	Prof. Arun Chattopadhyay Lecture 2: Transforming Nano science to Nano technology
11:30 am- 11:45 am	Tea
Session II	Chair person: Prof. Arun Chattopadhyay
11:45 am-1:00 pm	Prof. M. Palaniandavar Lecture 1: Structure and Function of Metallobiomolecules.
1:00 pm- 2:00 pm	Lunch break

Session III	Chair person: Prof. N. S. Islam
2:00 pm- 3:15pm	Dr. M. Velusamy Metal-Free Organic Dye for Dye sensitized Solar Cells(DSSC): An Overview
3:15 pm-3:35 pm	Tea Break
3:35 pm-4:50 pm	Prof. M. Palaniandavar Lecture 2: Metal Complexes as Probes for DNA structure and conformation and Metal Based Anticancer Drug Development.
Sunday,13th November, 2016	
Session I	Chair person: Prof. M. Palaniandavar,
9:00 am-10:30 am	Prof. T. Punniyamurthy Lecture 1: Regioselective C-H Functionalization and Carbon- Heteroatom Bond Formation
10:30 am-11:00 am	Tea
Session II	Chair person:
11:00 am- 12:30 pm	Prof. R. Murugavel Lecture 1: 100 years of Chemical Bond
12:30 pm-2.00 pm	Lunch
Session III	Chair person:
2:00 pm-3:15 pm	Prof. T. Punniyamurthy Lecture 2: Domino Strategies for the Synthesis of Medicinally Important Heterocycles.
3:15 pm-3:35 pm	Tea Break
3:35 pm- 4:50 pm	Prof. R. Murugavel Lecture 2: Evolution of Porous Solid
4:50 pm- 5:20 pm	Valedictory Function

Few Glimpses of the Lecture Workshop



A group photo taken during the lecture workshop



Prof. B. C. Ranu delivering a lecture during the workshop



Prof. Pradyut Ghosh delivering a lecture during the workshop



Prof. Arun Chattopadhyay delivering a lecture during the workshop



Prof. M. Palaniandavar delivering a lecture during the workshop



Prof. T. Punniyamurthi delivering a lecture during the workshop



Prof. R. Murugavel delivering a lecture during the workshop



Dr. M. Velusamy delivering a lecture during the workshop

List of participants of the Lecture Workshop

SI No.	Name	Department
1	Madhurya Kakati	Chemical Sciences, Tezpur University
2	Bikoshita Porashar	Chemical Sciences, Tezpur University
3	Queen Das	Chemical Sciences, Tezpur University
4	Nazia Farnaz	Chemical Sciences, Tezpur University
5	Susri Karuna Devi	Chemical Sciences, Tezpur University
6	Ashish Kumar Mazumdar	Chemical Sciences, Tezpur University
7	Ritumoni Deka	Chemical Sciences, Tezpur University
8	Partha pratim Churi	Chemical Sciences, Tezpur University
9	Bibhuti Bhusan Lara	Chemical Sciences, Tezpur University
10	Anjal Dutta	Chemical Sciences, Tezpur University
11	Biplop Chetia	Chemical Sciences, Tezpur University
12	Darshana Bordoloi	Chemical Sciences, Tezpur University
13	Sanjib Thakuria	Chemical Sciences, Tezpur University
14	Dipangkali Sarma	Chemical Sciences, Tezpur University
15	Ashim Jyoti Thakur	Chemical Sciences, Tezpur University
16	Jyotirmoi Hajong	Chemical Sciences, Tezpur University
17	Mubin Ul Hanif	Chemical Sciences, Tezpur University
18	Raju Bhawal	Chemical Sciences, Tezpur University
19	Sourav Kumar Haloi	Chemical Sciences, Tezpur University
20	Dhurava Jyoti Lahkar	Chemical Sciences, Tezpur University
21	Hrishikesh Bardalai	Chemical Sciences, Tezpur University
22	Afjalur Rahman	Chemical Sciences, Tezpur University
23	Debasish Sarmah	Chemical Sciences, Tezpur University
24	Abinash Tiwari	Chemical Sciences, Tezpur University
25	Manash Jyoti kalita	Chemical Sciences, Tezpur University
26	Subhom Sahoo	Chemical Sciences, Tezpur University
27	Paban Mandi	Chemical Sciences, Tezpur University
28	Sumit Phayel	Chemical Sciences, Tezpur University
29	Rabu Ranjan Changmai	Chemical Sciences, Tezpur University
30	Pallab Karjee	Chemical Sciences, Tezpur University
31	Ankit Sahoo	Chemical Sciences, Tezpur University
32	Monuranjan Konwar	Chemical Sciences, Tezpur University
33	Rajdikshit Gogoi	Chemical Sciences, Tezpur University
34	Himanshu Sharma	Chemical Sciences, Tezpur University
35	Parthapratim Barman	Chemical Sciences, Tezpur University
36	Ankita Das	Chemical Sciences, Tezpur University
37	Trishna Dutta	Chemical Sciences, Tezpur University

38	Susmita Nath	Chemical Sciences, Tezpur University
39	Priyanka Adhikari	Chemical Sciences, Tezpur University
40	Suravi Paul	Chemical Sciences, Tezpur University
41	Kalyani Narah	Chemical Sciences, Tezpur University
42	Himashree Sandhya Goswami	Chemical Sciences, Tezpur University
43	Prantika Bhattacharjee	Chemical Sciences, Tezpur University
44	Sukanya Das	Chemical Sciences, Tezpur University
45	Rashmi Sengupta	Chemical Sciences, Tezpur University
46	Gitashree Choudhury	Chemical Sciences, Tezpur University
47	Dikshita Dowerah	Chemical Sciences, Tezpur University
48	Abhishek Borborah	Chemical Sciences, Tezpur University
49	Nibedita Sarkar	Chemical Sciences, Tezpur University
50	Priyanka Doley	Chemical Sciences, Tezpur University
51	Hiya Talukdar	Chemical Sciences, Tezpur University
52	Himasri Lahkar	Chemical Sciences, Tezpur University
53	Nishant Biswakarma	Chemical Sciences, Tezpur University
54	Niharika Kashyap	Chemical Sciences, Tezpur University
55	Hridip Ranjan Sarma	Chemical Sciences, Tezpur University
56	Niranjan Ligira	Chemical Sciences, Tezpur University
57	Sudhangshu Priya Bharati	Chemical Sciences, Tezpur University
58	Sandeep Das	Chemical Sciences, Tezpur University
59	Naba Bhargab Das	Chemical Sciences, Tezpur University
60	Priyakshi Sharma	Chemical Sciences, Tezpur University
61	Indrani Sharma	Chemical Sciences, Tezpur University
62	Gorishmita Borah	Chemical Sciences, Tezpur University
63	Raj Shekhar Roy	Chemical Sciences, Tezpur University
64	Aridom Bikash Neog	Chemical Sciences, Tezpur University
65	Dipjyoti Bora	Chemical Sciences, Tezpur University
66	Dipankar Thakuria	Chemical Sciences, Tezpur University
67	Preetima Changmai	Chemical Sciences, Tezpur University
68	Anindita Lahkar	Chemical Sciences, Tezpur University
69	Debanga Bhausan Bora	Chemical Sciences, Tezpur University
70	Bijoy Ghosh	Chemical Sciences, Tezpur University
71	Subharajyoti Ghosh	Chemical Sciences, Tezpur University
72	Debabrat Pathak	Chemical Sciences, Tezpur University
73	Manash Pratim Upadhyaya	Chemical Sciences, Tezpur University
74	Himanshu Pratim Bhattacharyya	Chemical Sciences, Tezpur University
75	Diptajyoti Gogoi	Chemical Sciences, Tezpur University
76	Subhamoy Mukhopadhyay	Chemical Sciences, Tezpur University

77	Suman Lahkar	Chemical Sciences, Tezpur University
78	Rajashree Bortamuly	Chemical Sciences, Tezpur University
79	Subahnkar Rakhit	Chemical Sciences, Tezpur University
80	Geetali Sonowal	Chemical Sciences, Tezpur University
81	Bikash Kumar Das	Chemical Sciences, Tezpur University
82	Upen Bora	Chemical Sciences, Tezpur University
83	Ruprekha Das	Chemical Sciences, Tezpur University
84	Abhishek Sarkar	Chemical Sciences, Tezpur University
85	Raktim Gogoi	Chemical Sciences, Tezpur University
86	Kushal Sarkar	Chemical Sciences, Tezpur University
87	Shalani Roy	Chemical Sciences, Tezpur University
88	Chandrasee Rajkhowa	Chemical Sciences, Tezpur University
89	Bitap Raj Thakuria	Chemical Sciences, Tezpur University
90	Ashok Mishra	Chemical Sciences, Tezpur University
91	Subham Paul	Chemical Sciences, Tezpur University
92	Bedanta Pratim	Chemical Sciences, Tezpur University
93	Riya Saha	Chemical Sciences, Tezpur University
94	Sikha Jyoti Borah	Chemical Sciences, Tezpur University
95	Manisha Subedi	Chemical Sciences, Tezpur University
96	Aparajita Bora	Chemical Sciences, Tezpur University
97	Gunanga Gogoi	Chemical Sciences, Tezpur University
98	Dipjyoti Das	Chemical Sciences, Tezpur University
99	Priyanku Pratim	Chemical Sciences, Tezpur University
100	Dimpi Das	Chemical Sciences, Tezpur University
101	Priyanka Hazarika	Chemical Sciences, Tezpur University
102	Sivangi Paul	Chemical Sciences, Tezpur University
103	Mamon Dey	Chemical Sciences, Tezpur University
104	Suchibrata Borah	Chemical Sciences, Tezpur University
105	Bagmita Bhattacharyya	Chemical Sciences, Tezpur University
106	Prashurya Pritam Mudoj	Chemical Sciences, Tezpur University
107	Biraj Das	Chemical Sciences, Tezpur University
108	Mukesh Sharma	Chemical Sciences, Tezpur University
109	Dr. Stutee Chakravorty	Department of Chemistry, GIMT Tezpur
110	Anupam Chowdhury	Chemical Sciences, Tezpur University
111	Dr. Priyanka Borah	Department of Chemistry, NITS Mirza
112	Ms. Mitu Sharma	Chemical Sciences, Tezpur University
113	Hemi Borgohain	Chemical Sciences, Tezpur University
114	Manashi Sarmah	Chemical Sciences, Tezpur University
115	Runjun Devi	Chemical Sciences, Tezpur University

116	Pinky Gogoi	Chemical Sciences, Tezpur University
117	Susmita Saikia	Chemical Sciences, Tezpur University
118	Kabita Boruah	Chemical Sciences, Tezpur University
119	Gangutri Saikia	Chemical Sciences, Tezpur University
120	Bably Khatun	Chemical Sciences, Tezpur University
121	Ms. Jayashree Nath	Chemical Sciences, Tezpur University
122	Ms. Junali Handique	Chemical Sciences, Tezpur University
123	Ms. Chandrama Sarkar	Chemical Sciences, Tezpur University
124	Momina Khannam	Chemical Sciences, Tezpur University
125	Madhurjya Borah	Department of Chemistry, Tripura Univ
126	ShyamaCharanMandal	Department of Chemistry, Tripura Univ
127	Ajit Kumar Singha	Department of Chemistry, Tripura Univ
128	Santanu Saha	Department of Chemistry, Tripura Univ
129	Prasenjit Sarkar	Department of Chemistry, Tripura Univ
130	Arnab Bhattachrya	Department of Chemistry, Tripura Univ
131	Shivaneer Borpatra Gohain	Chemical Sciences, Tezpur University
132	Rakhee Saikia	Chemical Sciences, Tezpur University
133	Anurag Dutta	Chemical Sciences, Tezpur University
134	Manali Dutta	Chemical Sciences, Tezpur University
135	Pratishtha Chetia	Department of Chemistry, CCSU
136	Jubajani Sarma	Department of Chemistry, CCSU
137	Srutima Baishya	Department of Chemistry, CCSU
138	aziza rahman	Department of Chemistry, CCSU
139	Snigdha Saikia	Department of Chemistry, CCSU
140	Debalina Chakraborty	Department of Chemistry, CCSU
141	Dr Shaswat Barua	Department of Chemistry, Kaziranga Univ
142	Mr Akash Protim Bora	Department of Chemistry, Kaziranga Univ
143	Mr Jyotishman Borthakur	Department of Chemistry, Kaziranga Univ
144	Mr Bibekananda Gogoi	Department of Chemistry, Kaziranga Univ
145	Mr Aishwarjya Gogoi	Department of Chemistry, Kaziranga Univ
146	Ms Ankita Duarah	Department of Chemistry, Kaziranga Univ
147	Ms Anasuya Handique	Department of Chemistry, Kaziranga Univ
148	Ms Gayatry Bhattacharyya	Department of Chemistry, Kaziranga Univ
149	Ms Sarmishtha Borgohain	Department of Chemistry, Kaziranga Univ
150	Ms Shivaneer Borua	Department of Chemistry, Kaziranga Univ
151	Ms Mousumi Bora	Department of Chemistry, Kaziranga Univ
152	Rakesh Dutta	Dept. of chemistry, Gauhati University
153	Suranjana Patowary	Dept. of Chemistry, Gauhati University