A Report on the Science Academies (IAS, INSA, NASI) sponsored workshop on

Recent Trends in Chemistry
April 4-6, 2014
Organized by
Department of Chemistry, Mother Teresa Women’s University
Kodaikanal- 624 102, Tamilnadu

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A REPORT ON THE SCIENCE ACADEMIES SPONSORED THREE DAY LECTURE WORKSHOP ON RECENT TRENDS IN CHEMISTRY

DEPARTMENT OF CHEMISTRY, MOTHER TERESA WOMEN’S UNIVERSITY, KODAIKANAL

April 4-6, 2014.

A three day lecture workshop on “Recent Trends in Chemistry” was organised by the Department of Chemistry, Mother Teresa women’s University, Kodaikanal during 4-6, April, 2014. The workshop was sponsored by the three national science academies, the Indian Academy of Sciences, Bangalore, Indian National Science Academy, New Delhi and the National Academy of Sciences, India, Allahabad.

The aim of the lecture workshop was to create a passion for research in chemistry among young students and expose them to the expertise of the reputed academicians and scientists across the country.

The workshop commenced on April 4, 2014, with a brief inaugural ceremony. Dr. S. Natarajan, Chairman, Solid state and Structural Chemistry Unit, Indian Institute of Science, Bangalore inaugurated the workshop. In his inaugural address he stressed the importance of quality research in chemistry and motivated the young scholars and students to take up a good research career. Dr. N. Kala, Registrar i/c, Mother Teresa Women’s University presided over the inaugural ceremony. Dr. M. Palaniandavar, CUTN, Thiruvarur gave a brief outline of the science academies and the purpose of the lecture workshop. Dr. P. Selvam, IIT Chennai gave his felicitations.

The workshop featured invited lectures in the following frontier areas of chemistry by senior and reputed academicians and scientists. (Workshop time-table enclosed)

- Bioinorganic chemistry
- Functional Inorganic Frameworks
- Nanotechnology: Synthesis and Applications of Nanomaterials
- Supramolecular Chemistry
- Heterogeneous Catalysis
- Biomimetic Chemistry
The following delegates delivered lectures on frontier research areas in Chemistry

1. Prof. S. Natarajan, FASc, FNAS, FNA
   Chairman, Solid State and Structural Chemistry Unit (SSCU), Indian Institute of Science, Bangalore

2. Prof. P. Selvam, FRSC
   Professor, National Centre for Catalysis Research, Department of Chemistry, Indian Institute of Technology Madras, Chennai

3. Prof. M. Palanianadavar, FRSC, FASc, FNA
   Central University of Tamil Nadu, Thiruvarur

4. Prof. G. Mugesh, FASc, FNASE, FRSC
   Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore

5. Prof. G. U. Kulkarni, FASc, FNASE
   Dean - Faculty Affairs, Chemistry & Physics of Materials Unit, ICMS, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

6. Prof. M. Eswaramoorthy
   Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

7. Dr. V. Rajendran, Assistant Professor, Department of Chemistry, Central University of Tamil Nadu, Thiruvarur

8. Dr. R. Mayil Murugan, Assistant Professor, of Physical Chemistry, School of Chemistry, Madurai Kamaraj University, Madurai 625021

The first lecture was delivered on “Permanent Color and Chemistry” by Dr. S. Natarajan, SSCU, IISc, Bangalore wherein he gave an extensive picture on the colours of various materials, minerals, metal complexes and the chemistry behind the beautiful colours. The lecture was followed by fruitful discussions and the session was chaired by Dr. M. Palaniandavar. In the 2nd technical session, chaired by Dr. S. Natarajan, Dr. M. Palaniandavar, spoke on Structure and Function of Metallobiomolecules – I and Dr. G. Mugesh spoke on Bioinorganic Chemistry. Both the lectures highlighted the importance of metallobiomolecules and the participants were enlightened with an exclusive and useful session on bioinorganic chemistry. The third session was chaired by Dr. G. Mugesh and Dr. M. Eswaramoorthy delivered a lecture on Nanomaterials for biological applications wherein he spoke on the fundamental aspects of Nanomaterials and elaborated on the importance and biological applications of specific Nanomaterials. In the 4th session chaired by Dr. M.
Palaniandavar, a lecture on Recent progress in Nanoscience and technology was delivered by Dr. G. U. Kulkarni, which comprised of a brief history of Nanotechnology and recent developments in the research related to Nanoscience and technology. A lecture on Ordered nanoporous materials: A new class of inorganic solids was delivered by Dr. P. Selvam. Since Nanotechnology has emerged to be a very significant area of research, the participants were delighted and the lectures were followed by active discussions.

The second day programmes began with a lecture on Growing gold microplates on a hot plate by Dr. G. U. Kulkarni. The session was chaired by Dr. M. Palaniandavar. Following this, Dr. M. Eswaramoorthy, spoke on Porous materials: strategies to control their pore size and applications wherein he highlighted the importance of pore size and the methods to control the pore size. After the tea break, Dr. S. Natarajan spoke on Unusual acids in the synthesis of inorganic compounds highlighting the synthesis of some useful inorganic compounds the role of uncommon acids in their synthesis. Dr. G. Mugesh delivered the next lecture on Bioinspired chemistry for energy and environment where he explained the use of biomolecules in conserving energy and saving our environment. Dr. M. Palaniandavar delivered the next lecture on Structure and Function of Metallobiomolecules – II. He discussed some novel iron and copper complexes and their applications such as DNA cleavage and Bio-mimicking ability. The lecture was followed by Dr. R. Mayil Murugan’s talk on Bioinorganic Chemistry of Iron Transport and Storage in which he discussed on some iron complexes and their applications.

The Third day’s program started with a lecture on Metals in Medicine-1: Non-covalent DNA and Protein Binding Cu(II) and Ru(II) Complexes as Cytotoxic and Cellular Imaging Agents by Dr. V. Rajendran. He discussed on several copper and ruthenium complexes and their applications as Imaging agents. This lecture was followed by a talk on “ParaCEST MRI-Contrasting Agents” by Dr. R. Mayil Murugan, where he spoke on the fundamentals and applications of Magnetic resonance image contrast agents. The last lecture was delivered by Dr. V. Rajendran on Metals in Medicine-2 wherein he discussed on the cancer disease and the chemotherapeutic agents.

The workshop consisted of 10 technical sessions and 16 lectures during the three days. Each lecture was followed by an interactive discussion with the participants. About 100 participants including MSc students, research scholars & faculty members from Madurai
Kamaraj University, Mother Teresa Women’s University, Sri Sakthi College of Arts and Science Ottanchatram, Govt. Arts College, Karur, GTN College, Dindigul, Nadar Saraswathi College, Theni, Jayaraj Annapakiam college, Periyakulum participated in the lecture workshop.

The workshop ended with a brief valedictory session wherein representatives from each institution shared their feedback on the workshop. The overall feedback was good and the participants wanted more such workshops to be conducted. Most of the participants were motivated to pursue research in chemistry as noted from their feedback and had fruitful interactions with the resource persons. The speakers and participants gave very good comments on the arrangements. The workshop on the whole was a good success.
Science Academies Sponsored Three-Day Lecture Workshop on

RECENT TRENDS IN CHEMISTRY

DEPARTMENT OF CHEMISTRY
MOTHER TERESA WOMEN’S UNIVERSITY, KODAIKANAL

LECTURE PROGRAMME

April 04, 2014 Friday

10.30 AM: Inaugural Function

SESSION I

Chairperson: Professor Dr. P. Selvam
NCCR, IITM, Chennai

11.00 AM: L1: Permanent Color and Chemistry
Professor Dr. S. Natarajan
SSCU, IISc, Bangalore

Tea Break

SESSION II

Chairperson: Professor Dr. S. Natarajan

12.00 AM: L2: Structure and Function of Metallobiomolecules - I
Dr. M. Palaniandavar, CUTN, Thiruvarur

1.00 PM: L3: Bioinorganic Chemistry
Dr. G. Mugesh, IPC, IISc, Bangalore

2.00 PM: Lunch Break

SESSION III

Chairperson: Dr. G. Mugesh, IISc, Bangalore

03.00 PM: L4: Nanomaterials for biological applications
Dr. M. Eswaramoorthy
Chemistry and Physics of Materials Unit, JNCASR, Bangalore
SESSION IV
Chairperson: Dr. M. Palaniandavar, CUTN, Thiruvarur

04.00 PM: L5: Recent progress in Nanoscience and technology
Dr. G. U. Kulkarni, ICMS, JNCASR, Bangalore

5.00 PM: Tea Break

5.15 PM: L6: Ordered nanoporous materials: A new class of inorganic solids
Dr. P. Selvam, National Centre for Catalysis Research, IIT, Chennai

Day 2 Lectures – April 05, 2014 (Saturday)

SESSION V
Chairperson: Dr. M. Palaniandavar
Department of Chemistry, CUTN, Thiruvarur

09.30 AM: L7: Growing gold microplates on a hot plate
Dr. G. U. Kulkarni
ICMS, JNCASR, Bangalore

SESSION VI
Chairperson: Dr. G. U. Kulkarni, ICMS, JNCASR, Bangalore

10.30 AM: L8: Porous materials: strategies to control their pore size and applications
Dr. M. Eswaramoorthy, JNCASR, Bangalore

11.30 AM: Tea Break

12.00 PM: L9: Unusual acids in the synthesis of inorganic compounds
Dr. S. Natarajan, SSCU, IISC, Bangalore

01.00 PM: Lunch Break

SESSION VII
Chairperson: Professor Dr. S. Natarajan, SSCU, IISC, Bangalore

02.00 PM: L10: Bioinspired chemistry for energy and environment
Dr. G. Mugesh, IPC, IISc, Bangalore

03.00 PM: L11: Structure and Function of Metallobiomolecules - II
Dr. M. Palaniandavar, CUTN, Thiruvarur

04.00 PM: Tea Break
SESSION VIII
Chairperson: Dr. M. Eswaramoorthy, JNCASR, Bangalore

04.30 PM: L12: *Bioinorganic Chemistry of Iron Transport and Storage*
Dr. R. Mayil Murugan, MKU, Madurai

Day 3 Lectures - April 06, 2014 (Sunday)

SESSION IX
Chairperson: Dr. M. Palaniandavar, CUTN, Thiruvarur

9.30 AM: L13: *Metals in Medicine-1: Non-covalent DNA and Protein Binding Cu(II) and Ru(II) Complexes as Cytotoxic and Cellular Imaging Agents*
Dr. V. Rajendran, CUTN, Thiruvarur

10.30 AM: L14: Prof. P. Selvam, IIT, Chennai
11.30 AM: Tea break

SESSION X
Chairperson: Dr. M. Palanianadavar, CUTN, Thiruvarur

11.45 AM: L15: “ParaCEST MRI-Contrasting Agents”
Dr. R. Mayil Murugan, MKU, Madurai

12.45 PM: L16: *Metals in Medicine-2*
Dr. V. Rajendran, CUTN, Thiruvarur

1.45 PM Valedictory and Lunch