Brief Report on “SCIENCE ACADEMIES’ LECTURE WORKSHOP ON
‘RECENT DEVELOPMENTS IN PHYSICS’

We conducted the two day lecture workshop on “SCIENCE ACADEMIES’ LECTURE WORKSHOP ON ‘RECENT DEVELOPMENTS IN PHYSICS” (sponsored by Indian Science Academies”) during 3rd and 4th March, 2011 at Government Arts College, Melur.

All the expected resource persons (6 numbers) participated and delivered lecturers in their field of specialization. The number of participants was above our earlier expectation (60 numbers) and it was 89 numbers during the lecture workshop on both these days.

On 3rd March, 2011, the registration was started at 9:30 am. and it came to an end at 10:00 am. The inaugural session was started at 10:00 am and Dr. A. John Peter, Head of the Department of Physics and Organizer of the lecture workshop, welcomed the gathering. Prof S. Kalimuthu, (Principal, Government Arts College, Melur) presided over the function. Prof M. Lakshmanan (Convener of the Lecture Workshop & Professor of Eminence, Department of Physics, Bharathidasan University, Trichy) delivered the inaugural address. In his address, he insisted the role of colleges for the upliftment of the society through the development of science and elaborated the activities of all the three science academies for the spreading of scientific knowledge in India. In addition, he appreciated the Government Arts College, Melur for getting financial support from the science academies’ and wished the college to be success in the course of time by conducting similar programmes for the benefit of scientific community and hence society. During the inaugural session, Prof. Sethuraman (Dean, Vinayaka Mission’s Kirupananda Vairiyar Engineering College, Salem) and Faculty members from Government Arts College, Melur were present along with the participants from various colleges, research institutions and universities in the southern region of Tamil Nadu. The inaugural session came to an end with the vote of thanks by Dr. R. V. Jeba Rajasekhar, the other organizer who specially thanked the science academies’ for not only having considered our application for conducting the lecture workshop but also providing financial support in time.

The technical session was started at 10.30 am and Prof M. Lakshmanan (Professor of Eminence, Department of Physics, Bharathidasan University, Trichy) delivered the talk on ‘Nonlinear Dynamics - A Science of Complexity: An Introduction’. In his talk, he started with the fundamentals of non linear dynamics and continued the evolutionary problems along with
nonlinear equations. The nonlinear oscillators and chaos, nonlinear electronic circuits, synchronization of chaos and application to brain dynamics were emphasized in his talk. It was concluded that nonlinear differential equations of different types would be indispensable tools of research in science and nonlinear dynamics would continue to be a vibrant field with considerable potential applications. The session came to an end at 12:00. After a tea break, the second session was started at 12:10 pm. and it was continued until 01:40 pm. Prof G. Baskaran (The Institute of Mathematical Sciences Chennai) delivered the lecture. In his lecture on the topic ‘Superconductivity 100 Years Young’, he explained the birth of superconductivity, historical attempts to understand Superconductivity and Meissner Effect & Josephson Effects on superconductivity. Subsequently, he explained the applications of superconductivity in connection with the detection of tiny magnetic fields, imaging the functions of brain, operations of switches in computers and detection of flaw in circuits and Qubits. Finally, modern superconductivity materials tell about new material of graphene, new system of superconductivity materials like CuO La$_2$CuO$_4$, CaCuO$_2$. Then the participants interacted the resource person with the questions.

After the lunch break, Prof. J.Sethuraman (Dean, innovation & Extention, Vinayaka Mission’s Kirupanada Varayar Engineering College, Salem) delivered the lecture on labVIEW software the advanced computational technique in solving problems. Further, he demonstrated the virtual practical examples using opamp circuit such as addition, subtraction, integration, etc. with the help of labVIEW software. And also showed a new hardware MyDAQ interfacing with a computer, its capability of more than 10 electronics practicals in a single instrument.

On the second day, the pre lunch session was handled by Prof C.S. Shastry (Chairman, Department of Sciences, Amrita University, Coimbatore) at 10 am. His talk was on “analytical s-matrix approach for the study of alpha decay of super heavy elements” and lasted for one and half hour. He started with Super heavy elements, renewed interest in $\alpha$-decay and the framework of S-matrix and WKB methods for the study of $\alpha$-decay of Super heavy elements. Then, we had a break for tea for 15 min. Prof. M. Mangalraj (Head & Co-ordinator, Nanoscience & Technology, Bharathiar University, Coimbatore) continued the session with his talk on Development of nanostructured materials using bottom up approach. He gave the introduction about the nanoscience and technology, explained the nanostructured materials and device fabrications and nanocomposite biomaterials. He also dealt with some promising candidates for those materials.
Then, for the post lunch session, Dr. V. Yegnaraman, CSIR-CECRI Karaikudi, occupied the session. He dealt with Electrochemical Sensor, Ultramicroelectrodes & Microarrays, Chemically Modified Electrodes- Polymer-Nanocomposites as Modifiers Microfluidics & Lab-on-a-chip EC Detection of Biomolecules. Then he narrated How the nanomaterials help in Electrochemical Sensing. He concluded with the Electroanalysis - an excellent base for the development of Electrochemical sensors. All the talks were informative and useful for the audiences. The workshop ended with the valedictory function. I thanked the members in the organizing committee and all the participants for their kind support and co-operation to run this function successfully.

Agenda

Inaugural Function

Invocation

*Welcome address : Dr.A.John Peter

*Presidential address : Prof S. Kalimuthu
                      Principal (FAC)
                      Government Arts College
                      Melur 625 106.

*Inaugural address : Prof M. Lakshmanan
                    Professor of Eminence
                    Department of Physics
                    Bharathidasan University, Trichy

*Vote of thanks : Dr.R.V.Jeba rajasekhar
Time Table for the Resource Persons

I-Day (03.03.2011)

1. Prof.M.Laksmanan 10:30 AM to 12:00PM
2. Break for tea 12 noon to 12.10 pm
3. Prof.G.Baskaran 12.00 pm to 1.40 pm
4. Lunch 1:40 pm to 2:30 pm
5. Prof.J.Sethuraman 02:30 PM to 03:30PM (continued)
6. Break for tea 3:30 pm to 3:45 pm
7. Prof.J.Sethuraman 03:45 PM to 04:30PM

II-Day (04.03.2011)

8. Prof.C.S.Shastry 10:00 AM to 11:30PM
9. Break for tea 11:30AM to 11:45 AM
10. Prof.M.Mangalraj 11:45 AM to 01:15 PM
11. Lunch 1:15 PM to 02:15 PM
12. Dr.V.Yegnaraman 02:15 PM to 03:45PM
13. Break for tea 03:45 PM to 04:00 PM
14. Valedictory function 04:00 PM to 04:30PM
SCIENCE ACADEMIES' LECTURE WORKSHOP ON
Recent Developments in Physics

Sponsored by
Indian Academy of Science, Bangalore
Indian National Science Academy, New Delhi
The National Academy of Sciences - India, Allahabad

Organized by
Department of Physics, Government Arts College, Melur-625016