
REPORT

Day-1: 21-02-2014

Registration was held between 9am and 9.30am. Teachers from different parts of Karnataka and students from Tumkur University and Bangalore University limits were participated. Ninety seven Degree College teachers and eighty six students from Degree Colleges and Universities were registered in the workshop.

The lecture workshop began with the key note address by Prof. K.S Rangappa Vice–Chancellor, University of Mysore. He stressed the importance materials research and nanotechnology. He pointed out, ‘Radical materials advances can drive the creation of new products or even new industries, but stable industries also employ materials scientists to make incremental improvements and troubleshoot issues with currently used materials’. He elaborated the recent advances in nano-medicine.

Soon after the key note address, Professor K J Rao elaborated the scope and relevance of the work shop. He gave a detailed over-view on the programs of the Academies. He also stressed the teachers and students to avail the different programs run by Indian Academies of Science.

The first lecture was delivered by Prof. D D Sarma, Chairman, Solid State Structural Chemistry Unit, Indian Institute of Science, Bangalore, on the subject “Modern applications of magnetic materials.” He gave the importance of super – exchange of spin and its role in various applications. During the interaction session, teachers and students enquired about various applications of magnetic materials with special reference to levitated trains, MRI and memory devices.
The second lecture after tea-break was given by Prof. RMVGK Rao. Retired Scientist-F, National Aerospace Laboratories and Fellow of National Academy of Engineering, delivered a lecture on composite materials applications. He gave the salient features and importance of polymers in the field of Aviation. During the interactive session, students and teachers asked about smart polymer materials.

Soon after the lunch, the session began with an invited talk by Professor K B R Varma, Chairman, Materials Research Centre, IISc Bangalore. He spoke on the topic “expanding world of smart materials “He emphasized the superior functionality of certain materials compared to conventional materials. During the interactive session students enquired the research avenues and facility in the field of smart materials.

The concluding lecture of day-1 was delivered by Professor T N Guru Row, Solid State State Structural Chemistry Unit, IISc, Bangalore. Delivered a thought-provoking lecture on “Nature of Chemical Bonding- Perspective from Electron Density Analysis”. He emphasized that “All ionic compounds have some degree of covalent bonding or electron sharing. Thus, the term "ionic bonding" is given when the ionic character is greater than the covalent character - that is, a bond in which a large electro-negativity difference exists between the two atoms, causing the bonding to be more polar (ionic) than in covalent bonding where electrons are shared more equally. Bonds with partially ionic and partially covalent character are called polar covalent bonds. He mentioned about the new concept of polarization of electrons and holes on which his students are working. Teacher’s participants enthused about the new concepts and some of them asked questions.

Day-2: 22/02/2014

The day began with the lecture by Prof. N Munichandraiah, Department of Inorganic Chemistry Indian Institute of Science, Bangalore. He delivered lecture on “The Challenge of Energy Storage; Batteries” He pointed out various energy storage problems and some of the remedial measures.
After the tea break, Professor S Asokan Department of Instrumentation and Applied Physics, IISc., Bangalore, spoke on very important class of materials namely “sensor materials.” Professor elaborated various sensing devices, sensor materials, materials–testing at his laboratory. Student interacted with him enthusiastically. Students enquired about various sensing points in the light combat aircraft (LCA), where sensors play a pivotal role. After the interacting session, group photo was organized.

After the lunch Dr. C Narayanareddy, Dept. of Physics, SSCASC, Tumkur, gave a lecture “On recent advances in glass science and technology”. He briefed about the historic, present and future perspectives of glassy materials, glassy electrolytes, smart glasses, laser host glasses etc.

After the tea break Dr G U Kulkarni JNCASR delivered a special lecture on “Small can be beautiful and exited”. He gave an over view about the present and future perspective of nano science and Technology. Further, he explained the recent advances in nano materials research. He also mentioned some of the recent medical applications of nano-composites. During interactive secession students pose questions about the functionality of smart and nano-materials. Students enthusiastically enquired about the research avenues in the field of nano-materials.

In the feedback session, teachers and students expressed their admiration about the ‘Science Academies’ efforts to strengthen science education in India. They expressed their happiness about the resource persons, topics selected and content delivered in the workshop. Some of the teacher participants suggested the organizers to conduct a week-long program. They appreciated the hospitality and concern shown by the host Institution.

Co-coordinator

(Dr. C Narayana Reddy)