

passing through different phases of development. He admired the evolved diversified DAE culture for in-built patience, perseverance, resilience and mutual appreciation. He informed that realistic planning; continuous involvement and follow up; strict adherence to time schedules; foreseeing obstacles and remedial measures are the keys to success in DAE projects. Inspiring the members of system operation and maintenance, he explained that these activities have key-role in programme deliverables. Though the work demands discipline and tasks are repetitive in nature, there is a wide scope of innovations. He advised the research groups to avoid fashionable research and to focus on the activities linked with the DAE mandates. Explaining the importance of all activities, he told that every pixel in the picture has its own importance and the wrong placement of single pixel is enough to distort the whole picture.

Dr. S C Mehandale, Head, Laser Physics Applications Division proposed the vote of thanks. The foundation day programme was anchored by Dr. S M Oak, Head Solid State Laser Division.

## N.2: National Science Day at RRCAT

National Science Day is celebrated every year on the last Saturday of February at Raja Ramanna Centre for Advanced Technology, Indore. This year, it was celebrated on 26 February, 2011. More than 1350 students and teachers of 103 schools and colleges from Indore and nearby area visited the scientific facilities at RRCAT. The programme was started with the welcome speech by Shri H S Vora, Convener, National Science Day-2011 (NSD-2011). Shri Vora invited Dr. P D Gupta, Director RRCAT for the inauguration of NSD-2011 and to address the gathering. In his address, Dr. Gupta informed that the National Science Day is celebrated to commemorate the path-breaking discovery of Raman effect which led to the winning of Nobel Prize by Prof. C.V. Raman. Dr. Gupta highlighted several inspirational aspects of Prof. Raman's personality and life-style besides his scientific contributions. Dr. Gupta also discussed the growth of Indian science in the last few decades and the contributions of the Department of Atomic Energy in the enhancement of science and technology capabilities of our country. He also gave an overview of laser and accelerator activities at RRCAT and explained several applications. His simple and easy to understand explanations stimulated all the students and teachers towards the science. He also briefed the prospects of scientific research as a career to the students. Shri Sanjay Chouksey, Co-Convener, NSD-2011 proposed vote of thanks.

RRCAT volunteers escorted the students to various laboratories in small groups. There were about 75 exhibits/posters/ presentations in 12 buildings to explain the scientific and technical activities of the centre. The students



*Dr. P D Gupta, Director RRCAT addressing the students and teachers during National Science Day Celebration*

and teachers were very much impressed by the interesting exhibits. Students visited Synchrotron Radiation Sources (SRS) : Indus-1 and Indus-2, laser laboratories, cryogenic laboratory, workshop and various other laboratories. Snacks and lunch were arranged to all the students and accompanying faculties. The laboratories were kept open for family members of RRCAT employees to visit and see the on-going activities.



*Students visiting Indus-2 during National Science Day Celebration*

This yearly effort brought an enthusiastic approach among the students. They admired the scientific activities being pursued by DAE in general and RRCAT in particular.

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## N.3: Interaction Meet on Utilization of Laser Technology in Industry & Medicine at RRCAT

A two-day interaction meet on utilization of lasers in industry and medicine was organized during 28<sup>th</sup> - 29<sup>th</sup> April 2011 at Raja Ramanna Centre for Advanced Technology, Indore. The meet, organized by Indian Laser Association (ILA) in association with RRCAT, was a part of the celebrations to mark 50 years of invention of laser. The motive of this meet was to foster interaction between academic/research institutions of the country and Indian industry. The prime objective of the meet was to showcase indigenous technologies developed in the area of the industrial and medical applications of lasers in major academic and

research institutions of the country and to promote active interaction between academic/research institutions of the country and Indian industry.

The meet was inaugurated by Dr. P. K. Gupta, President, ILA. The inaugural talk on technology generation and incubation was delivered by Shri A. M. Patankar, Head TT&CD of BARC. The key features of the meet were presentations by laser experts explaining rudiments of laser applications, presentations by industrial delegates outlining their experiences & prospective use of laser technology in their industry, and technology showcase sessions involving presentations of indigenous laser technologies. The meet was attended by about 30 participants from 25 different companies. There were about 35 different posters on various technologies developed at various R&D centers in India presented at the meet.

In forenoon session of the first day, presentations were made by Dr. L. M. Kukreja and Shri Rakesh Kaul covering the fundamentals of laser materials processing and an overview of technology showcase session. Shri A. M. Patankar delivered an informative talk on the modalities of technology transfer from DAE units to industrial partners. In the afternoon, three-hour technology showcase session provided a platform for one-to-one technical discussions between researchers and industrial delegates. This was followed by presentations by



industrial participants. Interesting presentations were made by delegates from Tata Motors Limited Pune, Bharat Heavy Electricals Limited Hyderabad, Larsen & Toubro Limited Mumbai and Archaeological Survey of India Indore. The proceedings of the day were concluded with a group discussion session chaired by Dr. P. K. Gupta. The session witnessed lively discussions among delegates further strengthening the interaction between laser research community and indigenous industries.

On the second day, the first talk was delivered by Prof. B. D. Gupta, Indian Institute of Technology Delhi on optical sensors for process monitoring. This was followed by a presentation by Dr. Sunita Belgamwar, Nexus Mechatronics Pune on laser therapy. Subsequent talks on optical spectroscopy and imaging for bio-medical diagnosis were delivered by Dr. Diwakar Rao and Dr. S. K. Majumder

respectively, while Dr. Sendhil Raja S. made a presentation on laser based metrology & inspection. These presentations were followed by a detailed informative presentation by Dr. P. S. Raju, Technology Development Board (TDB) Department of Science and Technology(DST) on various DST funding schemes. The meet was concluded with a group discussion session chaired by Dr. P. S. Raju.

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#### **N.4: Prestigious MRSI Medal conferred on Dr. Kukreja**



*Dr. L. M. Kukreja receiving MRSI medal and citation from Prof. T. Ramasami (left), Secretary, Department of Science & Technology and President of MRSI*

Dr. L. M. Kukreja, Head Laser Materials Processing Division RRCAT and Professor, Homi Bhabha National Institute was awarded with the Materials Research Society of India (MRSI) medal 2011. Besides the medal, this award included a citation and an invited lecture at the annual meeting of the MRSI held during February 14 – 16, 2011 in Bhopal. The citation reads that the MRSI medal is conferred on Dr. L. M. Kukreja 'in recognition of his significant contributions to the field of Materials Science and Engineering'. Dr. Kukreja joined Department of Atomic Energy in 1976 through the 20<sup>th</sup> batch of Training School at Bhabha Atomic Research Centre after completing M.Sc. in Physics from University of Rajasthan with gold medal. As a scientific officer at Laser Division, BARC he was instrumental in the laser fabrication of nuclear track detector module for the prestigious Indian cosmic ray experiment 'Anuradha' carried out aboard the US space shuttle Spacelab – 3 in 1985. In 1987, he completed Ph.D. on laser processing of polymers from BARC – Bombay University under the guidance of Dr. D. D. Bhawalkar, former Director of RRCAT. Dr. Kukreja was awarded with Humboldt fellowship to carry out postdoctoral research at University of Heidelberg, Germany during 1991 – 92. Since 1993 he is at RRCAT pursuing his research interests in the field of photonic nanomaterials and laser materials processing. He initiated the biennial DAE – BRNS meetings on pulsed laser deposition of thin films and nano-structured materials and serves on numerous academic and extra-mural committees of DAE, RRCAT and other organizations.