

## Seminar on SRS

An INDO-USSR seminar on "Synchrotron Radiation Source (SRS): Physics, Technology and Utilization" was organized at CAT from Jan 30 to Feb 4, 1989. The seminar was sponsored by the Department of Science and Technology under the Integrated Long Term Programme (ILTP) of co-operation in Science and Technology between India and USSR. Eleven Soviet scientists and about eighty scientists from various Indian laboratories and universities participated in the seminar.

Prof. G N Kulipanov of the Institute of Nuclear Physics, Novosibirsk, USSR, gave the key note address on synchrotron radiation sources. Prof. V.A. Sidorov, the leader of the Soviet delegation, presented highlights of the soviet programme in this area. Further, a total number of 26 lectures were delivered by Soviet and Indian scientists on various aspects of physics, design and engineering involved in SRS. The lectures on the design of the source included various aspects of the design of INDUS-I and its components. Some of the lecturers provided details of experiments carried out at the synchrotron radiation facilities at INP, Novosibirsk, USSR and the proposed experiments and the beamlines for the INDUS-I. The seminar also had lectures on topics such as development of microtron, free electron laser and optical klystrons. Prof. Yashpal, Chairman UGC, inaugurated the seminar and announced the setting up of a UGC centre to help the scientists from universities in conducting experiments on the synchrotron radiation sources under construction at CAT. Shri A S Rajarao of CAT was the secretary of this seminar.

## National Workshop on Stirling Cycle Liquid Nitrogen Plants

A national workshop on Stirling Cycle Liquid Nitrogen Plants was organised by the Indian Cryogenics Council (West zone) in collaboration with CAT, from July 10 to 14, 1989. The topics discussed at the workshop included general principles and applications of cryogenics, stirling cycle plants, their maintenance and trouble shooting, auxiliary systems for these plants, storage vessels, transfer systems etc. The workshop was attended by twenty six participants representing different organisation and fields of specialisation. The workshop was inaugurated by Prof. J P Srivastava, Director, SGS Institute of Technology & Science, Indore. Dr. M Thirumaleshwar of CAT was the convener of this workshop.

## Sixth National Seminar of Indian Society of Scientific Glass Blowers

A two day seminar on "Advances in Glasses and Ceramics" was organised at CAT from Oct. 3 to 7, 1989. This was followed by a three day workshop on "Glass and Ceramic to Metal Seals". One hundred and two delegates from various institutes and representatives from several industries participated in the seminar. The workshop was attended by thirty four participants. The seminar covered wide range of topics such as engineering ceramics, vitrification of nuclear waste, laser glasses, machines for glass capillaries, glass micro balloon targets for laser fusion studies and use of glass in astronomy. Participants of the workshop were given hands-on training in the technology of glass and ceramic to metal seals. The seminar and workshop were inaugurated by Shri D N Mishra, Director General, MP Council of Science and Technology. Dr. D D Bhawalkar, Director, CAT presided over the function while Dr. M K Gupta, Head TP & PED, BARC delivered the key-note address. Shri S S Marhas of CAT was the convener of this seminar.

## All India Course on Vacuum Science & Technology

A ten day All India Course on Vacuum Science & Technology was conducted by Indian Vacuum Society in collaboration with CAT from Oct. 16 to 26, 1989. The course covered a wide range of topics on vacuum science and technology like vacuum physics, production and measurement of vacuum, system design and applications with special emphasis on ultra high vacuum. There were more than 30 hours of lectures and 25 hours of practicals. A few technical films on these topics were also screened. Fifty four participants from universities, research laboratories and industries from all over the country participated in the course. The teaching faculty comprised of experts from all over India. The course was inaugurated by Dr. D D Bhawalkar, Director, CAT while the valedictory address was given by Prof. M S Sodha, Vice Chancellor, Devi Ahilya Vishwa Vidhyalaya, Indore. Shri A S Rajarao of CAT was the convener.

## SERC School on Non Linear Optics

A Science and Engineering Research Council (SERC) School on Nonlinear Optics (Fifth meeting in the IPA-DST series on Lasers and Applications) was organized at CAT from Nov. 6 to 24, 1989. The school provided a thorough course in the rapidly expanding area of non-linear optics to fifty young researchers from all over India. The teaching faculty comprised of fourteen experts

from India and one from UK. Each lecturer gave a series of lectures on a topic of his specialization. The topics covered include second and third order nonlinear optical processes and materials, classical and quantum theories of nonlinear mixing, instabilities and chaos in lasers, optoelectronics, squeezed states of light, propagation of intense laser beams, soliton propagation, optical computation and nonlinear optical spectroscopy. Several experimental aspects such as importance of transverse modes in frequency conversion, low-level light detection, generation and characterization of ultra-short pulses were also discussed. Some of the participants also presented short seminars describing their research work. Dr. K C Rustagi of CAT was the convener of this school.

#### International Workshop on Laser-Plasma Interaction

A workshop on Laser Plasma Interaction (satellite meeting to the International Conference on Plasma Physics held at New Delhi Nov. 22 to 28, 1989) was organized at CAT from Nov 30 to Dec 5, 1989. Various physics, technological and diagnostics aspects of inertial confinement fusion, x-ray lasers, laser-plasma interaction, beat wave particle acceleration and soft x-ray generation etc. were discussed in depth. A group of 25 invited experts (of which 20 were from leading laboratories from USA, USSR, U.K., W. Germany, Japan, China and Poland) delivered lectures and held group discussions with a total number of 75 participants. The workshop was inaugurated by Dr. D D Bhawalkar, Director, CAT and the key-note address was delivered by Prof. M S Sodha, Vice-Chancellor, Devi Ahilya Vishwa Vidhyalaya, Indore. Shri H C Pant of BARC was the convener of this workshop.

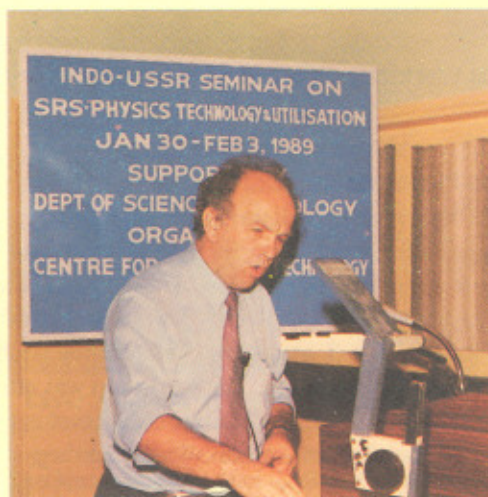
#### Lectures by visiting scientists

1. Y Iwasa, M.I.T, USA, delivered two lectures on aspects of super conducting and hybrid magnet systems - Jan 23 to 25, 1989.



Dr. D D Bhawalkar, Director, CAT welcoming the participants of INDO-USSR Seminar on SRS. Seated on the dias (from L to R) are Prof. Yashpal, Chairman UGC, Prof. Sidorov, leader of the Soviet delegation and Shri S S Ramamurthi, Project Manager (Accelerator).

2. "Cryogenics and Solid State Physics", E Gmelin, Max Planck Institute, Stuttgart, West Germany, Feb 17, 1989.
3. "Laser Spectroscopy Research in Institute of Spectroscopy" Y A Metvelz, O A Tumanov and F A Ryabov, Institute of Spectroscopy, Moscow, USSR, Feb 27, 1989.
4. "Ultrasensitive Laser Analytical Spectrometer and Applications". D Kompanetz, Institute of Spectroscopy, Moscow, USSR, April 6, 1989.
5. "Laser Applications in Medicine - Angioplasty", T Ramachandran, Sree Chitra Tirunal Institute for Medical Science & Technology, Trivandrum - July 21, 1989.
6. "Structural studies of the Crystal /Solution Interface using Synchrotron Radiation", T Shripati, Department of Physics, IISc., Bangalore - July 26, 1989.
7. "Experience at CEERI on the development of Microwave Tubes", S N Joshi and H N Bandopadhyay, CEERI, Pilani - Aug 7, 1989.
8. S V Subramanyam, IISc, Bangalore, delivered six lectures on aspects of work involving low temperature, high pressure and magnetic fields - Sept. 21-25, 1989.
9. "Super Collider - why we need it ?" K C Wali, Dept. of Physics, Syracuse University, USA -Nov 18, 1989.
10. "Acceleration of Electrons by Laser in Vacuum to TeV energy", H Hora, West Germany - Dec 4, 1989.
11. "Non-linear Optics of Thin Films", A Mukherjee, University of New Mexico, USA - Dec 19, 1989.
12. "Applications of Ultrashort Pulses to Coherent Harmonic Generation". N Mukherjee, University of New Mexico, USA - Dec 19, 1989.



Dr. G N Kulipanov of the Institute of Nuclear Physics, Novosibirsk, USSR delivering the key note address.