courses are planned in what is termed by DST as 'ancillary science-based services'. The first workshop on patents was held at the Meenakshi College for Women in Chennai on 5 September 2002.

In all categories the application form would require furnishing reasons that led to the 'break in scientific career'. For ensuring accountability expert committees and monitoring mechanisms would be put in place and a women cell at DST is also proposed to look into 'general matters of women scientists'.

V. S. Ramamurthy, Secretary, DST was proud of the new policy and upbeat on the future success of the new scheme and the interest it would generate from women scientists and technologists from all over the country. He, however, added that a consensus on the issue of 'flexible working times' could not be reached. However, one official source said that it would be up to individual institutions to frame their own rules on the matter.

But here is a word of caution. Drawing parallel to a dying plant that gets succor by a few days watering before its swan song, similarly little would change for these women unless backed up by major policy changes at the level of organizations, recruitment procedures, raising age limits for recruitment and fellowships, safety in night commuting, creches in work areas, etc. Otherwise, this would end up being an exercise in raising hopes for a 3–5 year period with no concrete possibilities from thereon. Also, care should be taken for example in defining the 'ancillary science services' such as DST has done here with regard to, for example, science journalism. This is especially at a time when science journalism in India requires a boost and there is urgent need in the march towards India's development to increase the scientific temper and understanding of the society at large of scientific work and related issues. For the Category C scholarships, an added requirement of undergoing a short entrepreneurship development course would be very useful. This is all the more important as DST hopes that the women would after the one-year period of scholarship generate their own clients through 'aggressive marketing' in their areas of skill.

The Department of Science and Technology, New Delhi appears open to innovative suggestions to enhance the involvement of women in the S&T sector. Women, especially those with breaks in career, have a chance to enter scientific laboratories in the near future.

Nirupa Sen

NEWS FOCUS

Institute of Physics, Bhubaneshwar

Situated on Sachivalaya Marg in Bhubaneshwar, the Institute of Physics (IOP) has come a long way since its inception over two decades ago, to a research centre of repute. Starting as an institute for theoretical physics research, it later ventured into areas of high energy physics, nuclear, atomic, molecular and condensed matter physics. It has also made a mark in experimental research in the field of accelerator-based basic and applied sciences. IOP is an autonomous research institute funded by the Department of Atomic Energy (DAE), Government of India and the Government of Orissa. The compact fifty-acre campus has both modern hostel facilities with a computer centre and spacious, well-equipped and fully automated library areas that are open round the clock. IOP is also a node for ANUNET for networking DAE facilities and aided institutions through VSAT.

The pre-doctoral (post M Sc) programme conducted by the institute imparts broad-based training in advanced physics and research methodology leading to a Diploma in Advanced Physics that could be useful for students, whether they finally choose a career in teaching or take up doctoral research. Recently, IOP has joined the Joint Entrance Screening Test (JEST) for conducting a written test for the Ph D programme in physics for students from all over the country. Doctoral students from IOP are awarded the Ph D degree by the Utkal University. The institute actively promotes a short-term visitors' programme for teachers from various colleges and universities in the surrounding region.

Besides the large body of work in various aspects of theoretical high energy physics such as cosmology, phase transitions, disordered materials, condensed matter physics, mesoscopic systems, nuclear many-body problems, etc., experimental research at IOP includes application of low energy accelerator beams for materials modification, characterization and surface analysis studies. More recently, the study of atomic clusters, nano materials and low dimensional systems has been initiated.

Experimental facilities at IOP: The Ion Beam Laboratory (IBL) is at the centre of experimental research conducted at IOP, with the 3 MeV pelletron accelerator providing the mainstay of facilities. Beam times have been made available for projects of several users from across the country.

The beamlines available at IOP are the following:

Rutherford Backscattering Spectrometry (RBS)/channelling and Particle Induced X-ray Emission (PIXE) beamline: RBS is used for studying films, coatings and surface layers, oxide and adsorbate contamination, diffusion and reaction kinetics in thin films, stoichiometry determination and depth and dopant profiles in semiconductors. PIXE is used for trace elemental analysis in diverse applications ranging from environmental to archaeological sciences. Recently, the National Museum, New Delhi has begun a project on the PIXE beamline to study their museum collections. RBS/

channelling helps to understand crystalline quality, strains, defects and lattice location of impurities in crystalline samples. A general-purpose scattering chamber/external PIXE line is being used for biological applications.

Accelerator Mass Spectrometry (AMS): This facility has potential for applications such as radiocarbon dating using ^{14}C and ^{10}Be. Data collected by IOP scientists on standard samples for $^{14}C/^{12}C$ ratio show an accuracy of 1%. AMS could be used for a wide variety of dating and trace applications in geological and planetary sciences, archaeology and biomedicine.

The other beamlines are for ion implantation and for study of surface physics. In addition, the ion micro-beamline facility, with a spatial resolution of 2 μm, has several uses from lithography to cell biology. The setting up of the peripheral stations and beamlines has been achieved with the expertise available within IOP itself. With the successes and utilization trends of the pelletron accelerator facilities at IOP, plans are afoot for setting up an 8 MeV terminal.

In the last few years, the Cluster and Nanostructure Laboratory has been established for synthesis of semiconductor nanostructures and metal clusters. Metallic cluster-assembled materials have been prepared using the low energy cluster beam deposition (LECBD) technique. Some of the research work conducted is in the area of Sb-cluster films, electrodeposited nanostructure semiconductors such as PbS, HgS and CdSe, and characterization of a nano-CdS/Au Schottky junction device.

In the year 2000–2001, several new experimental facilities were installed at IOP, augmenting the existing facilities. These facilities are the X-ray Photoelectron Spectrometer, the 200 keV High Resolution Transmission Electron Microscope and a Molecular Beam Epitaxy material growth facility. Research is ongoing in the area of gold silicides and Ge nanostructures along with investigation of Pt/C multilayers using X-ray reflectivity and Pt fluorescence yield excited by X-ray standing waves. Self-assembled nano-islands on thin Ge layers deposited on Si substrates are another area of interest.

R. K. Choudhury, the Director of IOP, said that the experimental programmes at the institute were unique in the country with facilities such as accelerator mass spectrometry, microbeam and ion beam-based surface physics research, with the 3 MeV pelletron accelerator being the mainstay of these research activities. The research programmes on clusters and nanomaterials had been extended to the synthesis and characterization of various metallic and semiconductor nanostructures. He also added that IOP has been making strides in international collaboration programmes on the relativistic heavy ion collision experiments being conducted in the ALICE experiment at LHC in CERN, Geneva and STAR experiment at Relativistic Heavy Ion Collider (RHIC) in BNL, USA. This is being done together with VECC, Kolkata and many Indian universities. IOP is thus part of the ALICE-India group comprising institutions and universities like SINP and VECC, Kolkata, IIT Mumbai and the Aligarh, Chandigarh, Jammu and Rajasthan universities.

In the year 2000–2001, there was the signing of a Memorandum of Understanding for the participation in STAR collaboration at the RHIC in BNL. In both these collaborations, IOP would be involved in the fabrication and development of photon multiplicity detectors. Facilities for prototype fabrication and testing have been set up for this purpose. IOP is developing and fabricating superconducting hexadecapole magnets, liquid nitrogen storage tanks and accelerator levelling jacks. IOP is also in the process of developing simulation and other software required for analysis of the experimental data from these experiments. IOP would be hosting the 20th International Conference of Atomic Collisions between 19 and 24 January 2003, this being held for the first time in India.

In spite of all the successes of IOP (research output in the form of 120 papers for the period 2000–2001 in internationally refereed journals), there appears to be an absence of larger research projects in identified fields of national interest, using the cross-disciplinary approach of expertise from within the institute itself. This would be quite feasible as the institute is flush with various experimental facilities and several theory groups.

Nirupa Sen

MEETING REPORTS

Physics at surfaces and interfaces*

Set against the backdrop of the Konark and Puri Jagannath temples, the International Conference on Physics at Surfaces and Interfaces (PSI 2002) was held at Toshali Sands, Puri. Study of the structure of surfaces and interfaces is important for understanding catalytic properties, multilayer systems, materials modified by swift heavy ions, semiconductor surfaces, nanoscale and quantum structures. There are a considerable number of experimental techniques, including those using synchrotron radiation sources used for characterizing these structures. These broad areas of materials science formed the basis for discussion at the conference.

Synchrotron radiation sources for X-ray diffraction and their use in application to surfaces and interfaces have produced advances in technology, with experimental techniques now well developed. A recent application of the use of synchrotron radiation was presented at the conference by Ian Robinson, Univer-

*A report on the International Conference on Physics at Surfaces and Interfaces, organized by the Institute of Physics, Bhubaneshwar and held during 4–8 March 2002 at Toshali Sands, Puri.