

## Break in career? 'Back to the bench' option for women

Women have been steadily entering the scientific fold by enrolling for M Sc and Ph D programmes, especially in certain fields such as biology. However, the subsequent dropout rate to pursue careers in science has been compounded by lack of foresight of policy makers. So far, policies on women scientists have catered very little for facilitating their continuance in science and subsequent career graphs.

In spite of a fair number of women having attained successes in their respective research careers in the country, there are yet a substantial number on the by-lanes, hardly contributing their scientific intellectual capacity for India's development. The economic prosperity of the nation suffers a big loss due to the insufficient utilization of this very vital section of trained women scientific personnel. The reason is simple. No policy to date addressed 'breaks in career'. Such breaks commonly occur either due to marriage, spouse transfers or family commitments including bringing up children.

Informal surveys revealed that trained women scientists with 'breaks in career' had a predominant feeling of frustration that although there was a desire to return to bench work, existing government policy disallowed this due to age restrictions. There existed no mechanism by which they could rejoin the scientific workforce. Further, dissemination of information regarding availability and variety of jobs in NGOs and other organizations is highly inadequate and hardly publicized. The 'work from home' option in areas that require scientific expertise has not even touched the tip of the iceberg. Such options need to be explored due to the tremendous strides in information technology that could now support such possibilities. All this is set to change. There has been a major policy initiative in this regard.

Spearheading this change is the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India with the formal approval of Murl Manohar Joshi, Union Minister for Science and Technology, Human Resource Development and Ocean Development, Government of India.

Under the banner of the 'Women Scientist Scheme' the following changes have been made to policy, providing opportunities to women scientists and technologists in the age bracket 30–50 years to return to mainstream science or bench work if they so desire. The upper age limit of 50 years is deliberate and applies with some conditions.

The DST scholarship for women scientists and technologists under the Women Scientists Scheme of the Science and Engineering Research Council (SERC) division of DST has the following components:

*Mandate.* To provide support to women scientists to pursue science in all aspects and encourage them to continue in the scientific profession and also to contribute towards application of science and technology to societal development.

*Types of scholarship options.* There are three proposed categories of scholarships that would be made available through either institutional or non-institutional means. Institutional includes national and state organizations, universities and laboratories and S&T-based voluntary organizations that have the legal status of being a registered society.

Under the institutional mode, two types of scholarships exist:

- Women Scientist Scholarship – Category A (WOS-A) for research in basic/applied sciences and
- Women Scientist Scholarship – Category B (WOS-B) for research in S&T-based societal programmes.

Under the non-institutional mode one type of scholarship exists:

- Women Scientist Scholarship – Category C (WOS-C) for S&T-based internships for self-employment.

This last category draws upon specialized knowledge in areas such as patenting, science journalism, proof reading for science books/journals, technical translation, clinical pathology laboratories, medical transcription, etc. whilst giving flexibility in work environment, i.e. working from the home.

Women trained in all streams of science and technology would be eligible, with about 100 scholarships to be offered per year, provided they fit the other criteria set by the DST. Preference would be given to women who do not hold regular positions and have had a break in career. The cut-off age for Category A is 35 for post-graduates and 50 for doctoral holders. In Category B the age limit has been set at 50. Both Category A and B allow for a minimum break period of two years. These two categories provide for a scholarship of Rupees 15,000 per month with research grants depending upon merit to the tune of Rupees 15 lakhs, for an initial period of three years extendable to five. The minimum basic qualification for science streams is a post-graduate degree. Surprisingly, incorporated into this policy is a provision for women without break in career to also apply for these scholarships. Perhaps this is a case of 'taking the cake and icing too', though official sources have described the justification as 'value addition to top meritorious candidates who qualified for paid fellowships such as NET, GATE, etc.'. This particular addition may in fact dilute the primary aim of the whole exercise in the long run.

Category B has objectives to encourage more women scientists and technologists to assist in societal development, especially in rural areas with the help of geographic information systems, watershed management, disaster management, etc. wherever applicable. Workshops and seminars are planned starting as early as September 2002 to sensitize women to opportunities. The organizations chosen for hosting workshops till December 2002 are Women Technology Park, Dehra Dun; SNDT University, Mumbai; Society for Rural Industrialization, Ranchi and Gender Cell Science City in Chennai.

Category C attracts scholarship of Rupees 10,000 per month for a period of one year with a minimum qualifying age of 26 years. This is devised more as an internship for gaining new skills towards self-employment while being associated with institutions, industry, NGOs, etc. For generating publicity and for disseminating the potentialities that exist for this group, a series of workshops and training

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 sci-

entific 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.

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## NEWS FOCUS

### Institute of Physics, Bhubaneswar

Situated on Sachivalaya Marg in Bhubaneswar, 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 lead-

ing 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/