

and abroad. This prize carries a cash award of Rs 1 lakh.

National Award for the Best Science and Technology Coverage in the Mass Media was given to Bir Singh who, while being a medical doctor at the All India Institute of Medical Sciences, New Delhi has written more than 14 books, 39 articles on community education and is a leading health columnist while also spreading health awareness in slum areas. The prize carries a cash award of Rs 50,000. The other recipient of the award

was H. R. Krishnamurthy, All India Radio, Delhi who has worked in the area of science popularization for the past twenty-five years, including 57 articles in dailies/weeklies of Karnataka and 900 radio programmes.

National Award for Best Effort in Science Popularization amongst Children was presented to the National Bal Bhawan, Delhi.

This year a Special Award of Rs 10,000 for Science Popularization was given to R. Parthasarathy who has had a

distinguished career in research and teaching at IIT, Madras and since 1990 has been writing a very popular and highly regarded column in a national English newspaper, profiling the life and achievements of scientists and inventors. These have been also brought out as a book in two volumes, *Paths of Innovators*.

Nirupa Sen

## MEETING REPORTS

### Indo-French perspectives on the way to go – Science in the 21st century

Meeting the challenges of the 21st century was deliberated on at the seminar on 'Directions of Science in the 21st Century – Indian and French Perspectives' held at the Indian National Science Academy (INSA), New Delhi on 17 February 2003. Goverdhan Mehta, Indian Institute of Science, Bangalore while lauding the long tradition of cooperation between France and India and the three decades of cooperation between INSA and the French Academy of Sciences, felt 'sustainability' is the way to go. The Ambassador of France in India, Dominique Girard spoke of the need for 'global reflection and analysis' on the theme of the seminar. In regard to the challenges posed by new technologies and sciences he said, 'the conviction of the French government is that it is essential to favour the exchange of views between scientists of countries which have a deep tradition of thought about nature and society, and which are willing to act for the mutual benefit of all human beings'. India and France are such countries, he added. A century is too long, felt M. G. K. Menon, for making dictions on how science would go. Society has to back science for science to move forward, and we can only talk of the underpinning elements, he added. He pointed out that the number of scientists among

the Indian population was miniscule, as too the number of women in science. He cited 'mathematical strength' as one underpinning element of importance in the French educational system saying, 'I wish we could learn from this'. He felt Indian science needed a revitalization of its education system, the necessity for an environment of meritocracy and a need for underpinning science with relevance to society. India, he said, had not done enough in the area of science for sustainable development.

Marie-Lise Chanin, CNRS, France felt that science education should play a role. Society is badly informed and scientists timidly face issues allowing powerful lobbies to exploit dissident voices among scientists. Basic research was essential and there was a need to communicate this in a simple manner. Society had to be educated in probabilities, uncertainties and statistics in order to understand risks, although she stated that mathematics education in France was still not good enough, while referring to the statement of Menon. There was need for a set of people who could maintain a dialogue with science policy makers, as scientists were not good at it themselves. Pr Jean-Marc Deshouillers, University Victor Segalen, Bordeaux said that due attention should be paid to remove both

illiteracy and insufficient knowledge of mathematics. He gave a unique example in France, wherein no distinction is made between pure and applied mathematics, as in the Mathematics Department of University of Dijon which, although has distinct groups in both streams of mathematics, gives scientists the flexibility to move easily from one team to another. Jean-François Sabouret described science festivals as a means for 'science to lift the veil of people's illusions'. Alain Aspect, CNRS said that society had the right to determine priorities in science; however the society was not interfering in basic research and, he added that development of technology must be linked to the society.

Sunita Narain, Editor of *Down to Earth*, spoke of 'science needed for daily lives'. She exhorted for a 'National Toilet Mission' for changing designs of flush toilets that do not destroy India's hydrological system. Having recently exposed 'pesticides in bottled water', she said that this was a reflection on the 'total and complete failure of Indian science' and added that *Current Science* would not have carried an article on it reflecting the mindset of Indian scientists. She said that scientists needed to think about the 'political economy of defecation' that involved the water cycle and contamination of groundwater. In

regard to air pollution caused by two wheelers – ‘vehicle of the poor’ – she said that ‘no research was being done on this by Indian scientists’. She also called for ‘new rockstar scientists’. Sharachandra Lele, Centre for Interdisciplinary Studies in Environment and Development, Bangalore described scientists as playing a double game in relation to socially relevant science. They possessed a ‘scientist’s schizophrenia’ with an aura of objectivity or consensus in regard to sustainability. He spoke of the need for a self-reflective, value-sensitive science and the ‘arrogance of the natural sciences’ that do not want to engage in socially relevant science. He felt that the mission statement of the Department of Space did not mention ‘people’, and he also called for a renaming of INSA to ‘INNSSA to stand for

Indian National Natural Sciences and Social Sciences Academy’.

Many in the audience felt that there could have been a greater mix of speakers and more representation from, for example, directors of Indian scientific institutions. Unofficially, it was known that the French speakers had come prepared to speak to children and the actual audience was quite the contrary. Participants at the seminar felt that there was a gnawing gap in communication among scientists, social scientists and the public at large. It may be time for India to pay greater heed to bridging this gap by establishing a mechanism for smooth, two-way transmission. This should ensure a ‘single window’ system where, together with dissemination of factual information, the toils of scientific research, both basic and applied, reached the unaware

and, for those shouting from the rooftops about the irrelevance of type of research being done, a chance to air their views. Perhaps, also creating a special breed of communicators who could keep this transmission error-free, while communicating the essence effectively to policy makers. A new transparent approach is necessary for the challenges we face. In a national context, the public understanding of science and also scientists’ understanding of what people need from science are the crux, if science has to move forward with society’s support and goodwill.

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## Phonons in condensed materials\*

The International Conference on ‘Phonons in Condensed Materials’ was the fourth in a series of conferences held in India during the past three decades or so. Nineteen invited talks and 52 contributed papers were presented, among which 45 were in the form of posters. Several theoretical and experimental aspects related to phonon physics such as phonon dispersion, neutron scattering, vibrational spectroscopy, anharmonicity, thermal properties, surface phonons, phase transitions and phonons in superconducting, nanostructured, superconducting, and disordered materials were covered in the conference. R. Chidambaram (Principal Scientific Advisor to the Government of India) gave the keynote address at the inaugural function at which Bhai Mahavir, the Governor of Madhya Pradesh, was the Chief Guest.

S. L. Chaplot [Bhabha Atomic Research Centre (BARC)] gave an over-

view of various lattice dynamics and molecular dynamics calculation methods. He also presented phonon dispersion curves and density of states, and compared the results with the experimental data in a variety of systems such as minerals, high-temperature superconductors and negative thermal expansion materials. The phonons in the negative thermal expansion materials were also discussed by R. Mittal (BARC) and T. R. Ravindran [Indira Gandhi Centre for Atomic Research (ICGAR)]. Mittal compared the density of states in zirconium tungstate and hafnium tungstate and presented the Gruneisen parameters from high-pressure neutron scattering experiments, whereas Ravindran identified the phonons of large anharmonicities in zirconium tungstate from analysis of temperature-dependence of phonon frequencies. Phonon dispersion curves of rare-earth chalcogenides were presented by P. K. Jha (M.S. University, Baroda). His results suggest that the mixed-valence state arises from the hybridization of f- and d-electrons. R. K. Singh (M.P. Bhoj (Open) University) outlined the significance of the three-body potential formalism for understanding the vibrational properties, elastic, defect and mixed crystal proper-

ties and the high-pressure phase transitions. He also discussed phonons in superconducting and orientationally disordered materials. *Ab initio* methods for the calculation of electronic band-structure and phonon dispersion were discussed by B. K. Godwal (BARC). The method uses *ab initio* pseudopotentials in the framework of density-functional theory. He also presented results on MgB<sub>2</sub>. Subrata Ghose (University of Washington, Seattle, USA) discussed the nature of dispersion curves of soft-phonons associated with phase transitions in several minerals such as anorthite and crysotolite. He also provided evidence of coexistence of phases and fluctuations near the transition temperature. Narayani Chowdhury (BARC) discussed the nature of dynamical behaviour of several minerals at high-pressure using molecular dynamics simulations, and discussed their stability in the context of the earth’s interior. The effect of anharmonicity on the thermal expansion was outlined by V. K. Jindal (Punjab University, Chandigarh). The technique of quasi-elastic neutron scattering was described by R. Mukhopadhyay (BARC), giving several examples of translational and rotational diffusion of molecules in different hosts/

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