

SAMPARK



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NEWSLETTER OF THE TIFR ALUMNI ASSOCIATION

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A view of the GMRT facility (near Narayangaon) of NCRA, TIFR

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FROM THE PATRON



TIFR imparts to all who were associated with it a lifelong commitment to excellence. Nowhere is this more apparent than in performance of our alumni and the contributions they continue to make to science, society and the nation at large. TAA has become a vital part of life at TIFR in a very short time since its inception. Through its sponsorship of best thesis awards, excellence in teaching awards, endowment efforts and the superb public lecture series, TAA has enhanced TIFR's stature in the scientific as well as the civic community. I am delighted to be associated with TAA; my colleagues and I will continue the tradition of full participation in TAA's activities and provide whatever assistance we can towards fulfilling TAA's mission. I urge all TIFR alumni to become members of TAA and help us preserve the special "TIFR experience" for the generations to come.

Prof. Sabyasachi Bhattacharya took over as the sixth Director of TIFR from October 31, 2002 and became Patron of the TIFR Alumni Association. He can be contacted at shobo@tifr.res.in

FROM THE PRESIDENT'S DESK

With the passage of time, the TIFR Alumni Association is maturing into a meaningful organization nurturing its objectives to fruition.

The key activities have been to establish a "Sampark" between the erstwhile TIFR Colleagues & linking them to the present TIFR generation, taking the spirit of Science to the public through a series of Public Lectures such as the JRD Tata Memorial Lecture Series delivered by illustrious members of the TIFR Alumni, internalizing the system of Best Thesis Awards and now initiating the best teacher award in TIFR.

We are indeed pleased that the membership drive has resulted in 240 members as of September 30, 2003, which include all the four Ex-Directors of TIFR. It is heartening to note that our alumni now spread over the world are coming forward to participate in the activities. We believe that such initiatives and many more will help to continually brighten TIFR's goal of attracting, producing and maintaining the best minds, and the scientific infrastructure.

It is indeed sad that some of our eminent colleagues are no more with us and we pray that their souls rest in peace.

We look forward to your keeping this "Sampark" live with your regular contributions in any manner that you consider most appropriate. With the growing support of all the alumni members of today and many more to join us in future, we are confident that the Association will grow organically and sustain itself to seed, nurture and parent newer dimensions in scientific thought and actions.

Prabuddha (Ramu) Ganguli



Dr. Ramu Ganguli is the President of TAA. He can be contacted at ramugang@vsnl.com

Do you know someone who is not a member of TAA? Please request him/her to contact the TAA at alumni@tifr.res.in

This issue of the newsletter has been co-sponsored by Professor Karamjit Arya & Sasken Communication Technologies Limited, Bangalore.

TIFR ALUMNI ASSOCIATION BEST THESIS AWARDS

We congratulate the following alumni for being selected for TAA awards and honorable mention in the respective fields.

Physical Sciences:

TAA-Geeta Udgaonkar Award

- 2001 Dr. Pratap Raychaudhuri, Department of Condensed Matter Physics and Materials Science.
- 2002 Dr. Arun Paramakanti, Department of Theoretical Physics.
- 2003 Sanjib Sabhapandit, Department of Theoretical Physics.

Honourable mentions for the year 2003:

Saubhik Datta and N.V. Suryanarayana.

Mathematics and Computer Science:

TAA-Harish Chandra Memorial Award

- 2001 Dr. A. Raghuram, School of Mathematics.
- 2002 Dr. Yogish I Holla, School of Mathematics.
- 2003 Pranab Sen, Department of Technology and Computer Sciences.

Honourable mention for the year 2003:

Pralay Chatterjee

Biological and Chemical Sciences:

TAA-Zita Lobo Memorial Award

- 2001 Dr. Sarata Chandra Sahu, Department of Chemical Sciences.
- 2002 Dr. Subhojit Sen, Department of Biological Sciences
- 2003 Atreya H. Sastry, Department of Chemical Sciences.

Honourable Mentions for the year 2003:

Amita Joshi and Dhanisha Jhaveri

All the three best Ph.D. thesis awards at TIFR are co-sponsored by *Sasken Communication Technologies Limited, Bangalore.*

Science with engagement and passion

Yash Pal

TAA commenced celebrating JRD Tata's birthday as an annual event from the year 2002. A summary of the first public lecture given by Dr. Yash Pal, National Research Professor on the birthday of JRD Tata, 29th July, 2002 is given below.

Acknowledging JRD Tata as a 'great builder of institutions and a supremely civilized human being', Prof. Yash Pal commented that 'the industrial world has seldom thrown up a personality as rich in texture as JRD Tata'. Recalling his 34 years of association with TIFR, where he began his research career, Prof. Yash Pal mused if he is given another life he would like to come back to TIFR as a research student provided TIFR is still around and he is accepted. The environment at TIFR 'encouraged engagements beyond the formal contours of science'. Even after his name ceased to be on the roll

of TIFR Prof. Yash Pal did not feel that he had ever departed. An infectious element seems to be seeded into the environment of TIFR that has stayed with everyone who spent any time here. Was it due to the blind faith 'that the right chemistry would automatically develop if some excellent young people were put together in a free atmosphere and allowed to do their own thing?'

Dr. Satish Dhawan invited Prof. Yash Pal in 1972 to organize the Space Application Centre (SAC) at Ahmedabad. Achieving self-reliance in many areas of Satellite Instructional Television Experiment (SITE) was an important objective. We needed to develop and build two major earth stations; design and fabricate thousands of direct reception sets along with low noise amplifiers and antennas and a large number of solid-state TV sets. Although the satellite was to be provided by NASA, with whom we developed a very fruitful collaboration, of a kind rather difficult to imagine now. In addition to communication, the other major applications of remote sensing also began at that time. Prof. Yash Pal narrated some of his experiences of trying to grow scientists and technologists at SAC.

1. A team of scientists designed the front-end converter for the satellite receiver. They worked in a place that had no environmental testing facility. For high temperature the sun and for low temperature an old refrigerator was used. Six units were sent to Washington for test report. The telex in reply said that all units had very poor temperature stability and the only way a needful development could be done was to send our engineers to NASA for training. There was no time to waste. Prof. Yash Pal discussed the problem with his engineers and after making sure that the problem was understood sent a telex back to NASA saying, no thank you, we will do it ourselves. Simultaneously Prof. Yash Pal sent telexes to half a dozen radio astronomers to rush to Ahmedabad to review the altered design. Following this the newly designed and fabricated units were sent to Washington for testing. Back came a congratulatory telegram, expressing surprise at the almost perfect performance of the new design.

Prof. Yash Pal believed if the engineers had been denied the chance, it would have been difficult to develop the atmosphere of creativity that came to pervade the Centre. 'Some people forget that often it is more important to invent a thing yourself than to get it. Unless the taste of discovery is established early, it will never come.' Prof. Yash Pal believes that a civilization that protects its young from the hassles of doing things themselves, deprives them of great joy and ultimately leads its society into a state of permanent dependence.

2. While communication satellite abolished distance on earth, remote sensing has enabled us to get a new look at the planet earth and understand their relational aspects-- we can see forests, while on the ground we were only aware of trees. Perspective can't be acquired from close proximity. 'Incidentally, this applies equally in matters personal, social or political.' Indeed we were

able to launch our experimental payloads for remote sensing into orbits within four years, even earlier than our communication payloads. By now we have operational remote sensing satellites whose performance compares favourably with those of others launched by any nation. The programme has been coupled intimately with large number of socio-economic programs, including detection of ground water sites.

3. Staying true to the objectives of the SITE experience Prof. Yash Pal involved nearly 200 social scientists. The team learned to build studios, to modify inexpensive cameras for fieldwork, involve many fresh people in actual audio-visual programme making. Prof. Yash Pal's team produced the science programmes for children with the help of fresh young producers from the Film Television Institute. Keeping in mind the fact that the only laboratory most of these children could access was their natural environment, their play and their homes. Prof. Yash Pal acknowledged the help provided by All India Radio, Ms. Madhuriben Shah, the then Education Officer of the Bombay Municipal Corporation, Dr. V.G. Kulkarni, Dr. Bhal Udgaonkar, M.S. Sathyu, Ms. Dina Pathak, her daughters Ratna and Supriya and Mr. Habib Tanvir. Prof. Yash Pal observed, 'It was wonderful to discover that when the objective has value and you seek help, worthwhile people consider it a favour that you asked them.'

4. Touching upon the Inter-University Centres and Real Education for the Real India, Prof. Yash Pal mentioned the famous example of JUGAD, a vehicle designed by a farmer. He used his diesel pump used for irrigating his fields, some spare parts from a used vehicle junk yard, built a wooden cart with four tyred wheels, springs and old Jeep clutch, a radiator and a sum of Rs 30,000 to build himself a vehicle. This vehicle could go at 40 km per hour, was inexpensive to run, carry 30 persons, a lot of stuff and even his water buffalo when there was a need. If anything went wrong he could fix it himself. He could use the same pump for pumping water. Lot of such vehicles started plying, first in the villages of Punjab, then in Haryana, Rajasthan and Western UP. Taxis using these JUGADS started plying. Then the officialdom and other interested parties got into the act. These vehicles were banned from the roads because they did not have engine numbers and were not registered! They still ply but the organized industry frowns upon them. Farmers showed the way by demonstrating what was adequate.

5. Prof. Yash Pal shared another story with the audience. He was visiting Krishi Vigyan Kendra, near Patiala, while working on a report entitled 'Technical Education for the Real India'. Apparently a farmer who was a regular visitor to the Kendra had planted a large tract of sunflower in addition to all his crops. He was admonished by the Kendra Scientists as they feared that the birds attracted to the sunflower seeds would also destroy his other crop. The farmer smiled and informed them that he had also started keeping a lot of honeybees. The bees visited the sunflower patch and

for some reason that kept the birds away. The end result of this innovation was that the farmer had a fifth crop also, a bonus, lot of honey. Such an innovation cannot be thought in a laboratory or the boardroom of a multinational seed company.

Prof. Yash Pal's passion has been to replace the impenetrable walls and boundaries with two-way permeable membranes. These walls exist between:

- A. Universities and Research Laboratories
- B. Industry and Academic Institutions
- C. Subterranean Learning and Innovation and Formal Education and Research
- D. Disciplines and Resulting Infertility of Information
- E. Instructing and Learning from Children
- F. Intellectual Understanding and Societal Brainwashing.

ALUMNI HONOURS

INSA Dr. Jagdish Shankar Memorial Lecture Award (2003): Prof. R.V. Hosur.

INSA Prize for Materials Science (2003): Prof. R. Nagarajan.

INSA Medal for Young Scientists (2003): Drs. P. Raychaudhuri, Y. Holla, D. Jhaveri, and S. Bhattacharya.

MP Birla Memorial Award (2003): Prof. P. C. Agrawal.

DST Swaranajayanti Fellowship: Dr. Lokesh Tribedi and Dr. Indranil Biswas.

Election to Academies, etc.

Prof. O. Siddiqi: Foreign Associate of the *US National Academy of Sciences*.

Profs. V. Rodrigues and N.K. Mondal: Fellows of *Indian National Science Academy, New Delhi*.

Profs. R.V. Gavai, Nimish. A. Shah and S. Sharma: Fellows, Indian Academy of Sciences, Bangalore

Dr. S. C. Agarkar Secretary of the newly established *CASTME (Commonwealth Association of Science, Technology and Mathematics Educators) - Asia*.

EXECUTIVE COMMITTEE: 2001-2003

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Plugging into the Sun: When Does Your Roof Provide for Your Electrical Needs?

Subhendu Guha

Summary of the talk delivered by Dr. Subhendu Guha, President, United Solar Systems Corporation, Michigan, USA on Friday, December 20, 2002. Dr. Guha was a member of TIFR from 1967 to 1984.

Dr. Guha started his lecture by quoting from the visionary scientist, Sir J. C. Bose who said as early as March 5, 1885, "I have been long thinking whether the vast solar energy that is wasted in the tropical regions can in any way be utilized. ---Now, I have been thinking whether we could not directly convert the energy of the light into that of electric current". The dream of the visionary became a reality in the last century.

The first solar cell was developed in the 1950s and the first practical solar cells were produced in the 1970s at a cost of \$100/ Watt. It is projected that the cost of the solar cell will come down to about \$2/Watt by 2010 primarily due to the development of new technologies and industrialization of these technologies. It is anticipated that the market exists for 1000 MW by 2010.

The photovoltaic cells (PV) are made of crystalline and polycrystalline silicon. Emerging technologies are based on amorphous silicon, cadmium telluride and copper indium diselenide.

Dr. Guha focused his lecture on solar panels made out of amorphous silicon alloy. They have several advantages over other materials, for example, low cost and superior high temperature performance. Amorphous or disordered materials do not have long-range order like crystalline materials. He explained the implications of such disorder in terms of weak bonds, dangling bonds and bond tails. He stated that the publication of a paper by S.R. Ovshinsky in 1968 entitled, “ Reversible switching phenomena in disordered structure”, attracted the attention of serious physicists to this unconventional material for making solar cells to computer memories. Out of these amorphous semiconductors, chalcogenides-alloys of Ge, Te, Se, As etc. are used for manufacture of switching memory devices while the tetrahedrally bonded alloys of Si, Ge, are used for manufacture of solar cells, flat panel displays, copiers etc. The first report of amorphous silicon (a-silicon) film appeared in 1969 and the film was deposited by glow – discharge decomposition of silane in Standard Telecommunications Limited (STL) laboratory at Chittick while the first solar cell was made at RCA Laboratory by David Carlsson with an efficiency of 2%.

Dr. Guha dwelt upon early work at TIFR. The activities on amorphous semiconductors were started at TIFR in 1971, triggered by a talk by Prof. Morrell Cohen. This research later bloomed in 1981 into a demonstration of improved stability of films grown using a mixture of *silane* and hydrogen. This technique, unfortunately never patented by TIFR, is now used for production by research laboratories and industries all over the world. History could have been different if TIFR patented the technique at that time.

Dr. Guha later described single-junction cells, their characteristics and multi-junction cells and the advantage of the latter over the former and the means to obtain high efficiency and finally the requirement for production. Later, he dealt with the manufacturing aspects of these devices starting from a plant of 5 MW to 25 MW, a plant that is scheduled for production this year. He showed some samples of solar cells that can be used in rural India and how these devices can revolutionize the communication field.

Dr. Guha gave the audience an idea of the buildings with solar panels on the roofs and how these solar panels can be installed on the roofs without spoiling the aesthetics. He emphasized the advantages of solar cells over conventional ways of generating electricity although the PV system is still not cost-effective. In the Indian context, the pollution levels will be alarming in future and the levels of particulate matter are particularly high in Indian cities compared to many other cities in the world and compared to the levels prescribed by WHO thus making the PV system a viable alternative.

Dr. Guha ended his talk by outlining the challenges that lie ahead in order to make PV system competitive and concluded his talk with a quotation from Edith Hamilton, a famous historian, who said, “ In the end, more than they wanted freedom, they wanted a comfortable life- and they lost both comfort and freedom. When the

Athenians wanted not to give to society but for society to give to them, when the freedom they wished for most was freedom from responsibility, then Athens ceased to be free”. Got the message?

Dr. Guha exhorted the audience: “We cannot let it happen, we have the power to change it”.

SUPPLEMENTARY LIST OF REGISTERED MEMBERS OF TIFR ALUMNI ASSOCIATION

(This list consists of names of new members and those that did not appear in the first newsletter, Vol.1, No.1, December, 2002, available as PDF on TAA website.)

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Science in India – Yesterday, Today, Tomorrow

B.M. Udgaonkar

Summary of the public lecture delivered on Feb 28, 2003- the National Science Day.

Prof. B. M. Udgaonkar (BMU) joined TIFR as a student of Homi Bhabha in 1949. He continues to be associated with the Homi Bhabha Centre for Science Education, TIFR. What follows is a summary of his talk.

India's contributions to science and technology over the millennia, have been quite significant. Without being chauvinistic, one can mention achievements over a broad spectrum: the well-planned towns of the Indus-valley civilization (c 2750 – 1900 BC) with excellent drainage systems, and the first tidal dock of the ancient world at Lothal; the concept of *rita* or cosmic order or Natural Law in the Vedas (c. 1500 B.C.); geometry in *śulva-sūtras* (c. 500 B.C.) including the so-called Pythagorean Theorem; decimal place value system (early A.D.); contributions of Aryabhata, Brahmagupta, Bhaskaracharya and others, especially in the Kerala School, to mathematics (5 – 15 centuries A.D.); the pioneering contributions of Panini to the structural analysis of a language (c. 350 B.C.); the contributions of Caraka, Susruta and others to Ayurveda or Health Science, which gave India a pre-eminent position in medicine in the world, down to about 1000 A.D; metallurgy and metal working (ferrous and non-ferrous); textiles; rocketry to Tipu Sultan (1800 A.D); art and architecture; civil construction; ship building, tank irrigation system of south India; and so on.

Why then is it, that in spite of this base, the scientific revolution did not (or could not?) take place in India? Several causes have been adduced by different people: e.g. 1) the supposed other worldliness of Indian Culture, 2) influence of Buddhism 3) impact of Sufism and Bhaktimarg; 4) a belief that all knowledge was in the Vedas; 5) a decline of questioning attitude; 6) rigidity of the caste system; 7) conflict between science and religion; 8) a tendency to accommodate conflicting

opposites; 9) suppression of scientific spirit for political reasons; 10) ban on foreign travel; 11) complacency and insularity; 12) effect of invasions; 13) handicap of oral tradition; 14) the classical educational environment in general; 15) the failure to create any new universities after the destruction of the old; 16) lack of interest in printing technology and other inventions seen with the Europeans; 17) neglect of R & D; 18) too big a load from the past.

After commenting on these supposed causes, BMU turned to the modern period. Why is it that outstanding scientists like C.V. Raman, J.C. Bose, S. N. Bose, M.N. Saha emerged in the beginning of the 20th century, but one cannot name comparable figures in science after Independence? Two points need to be taken into account in this connection: 1) beginning of the 20th century was a period of a kind of renaissance, when the national spirit was high in all spheres of activity, and development of science was only a part of the efflorescence of activity; which encompassed other areas of scholarship, literature, freedom struggle, industry, arts etc; similar spirit never arose in the post-Independence era; 2) the post-Independence period was, however, a period of institution building – the laboratories of CSIR, the Department of Atomic Energy, the Indian Space Research Organisation, and the IITs, among others, whose contributions over a broad spectrum have to be recognized.

The question still remains, with the broad and significant base created in the last five decades, can one now expect some peaks to arise? BMU expressed the view that one could, if the environment for science is substantially improved in the following regards: 1) At least some universities have to be selectively improved to bring them on par with the best in the world; 2) the bureaucratization of science management that has taken place over the decades, in spite of the fact that scientists head the research laboratories and head most of the scientific departments of government is reversed. 3) quest for excellence is systematically promoted as a value in our scientific institutions; 4) an all-out effort is made by the scientific institutions to attract the brightest students to science. From the point of view of (2), (3) and (4); it will be useful if scientific institutions carry out a periodical internal self-review for goal setting and identifying one's strengths and weaknesses in relation to the goals. Government departments which fund scientific departments must also give up the tendency to exercise control through purse-strings, and to demand bureaucratic procedures inappropriate for scientific institutions.

WE REMEMBER

Mukkattu Ramachandra Das
(1937-2003)

Dr. Mukkattu Ramachandra Das, with a gold medal in Chemistry from the University of Kerala, embarked on a scientific career first at TIFR in 1958. His Ph.D. work encompassed a study of ¹³C-labelled organic quinonoid

compounds by using Electron Spin Resonance (ESR). These contributions proved to be a forerunner of studies on electron –nuclear double resonance and electron transfer in biological quinonoids like vitamin-K and co-enzymes Q-10 (in collaboration with Dr. George Fraenkel and Jack Freed). Dr. Das made a transition from Chemistry to Molecular Biology at Dr. Solomen Spiegelman's laboratory in Columbia University from 1969-1971. There, he made two seminal discoveries with his teammates, one that the enzyme reverse transcriptase was an integral part of all RNA-tumour viruses they examined, and second, that this enzyme had additional properties similar to cellular DNA polymerases that elegantly explained its role as a generator of stable genetic information in DNA starting from unstable molecules such as RNA. After return to TIFR in 1971, Dr. Das, along with Drs. S. M. Sirsat and D. H. Moore discovered that RNAses present in human milk are capable of providing protection against RNA-virus infections.

Dr. Das moved from TIFR to Centre for Cellular and Molecular Biology, (CCMB), Hyderabad in 1979, where he continued work on RNAses and studied the role of oncogenes in tumours. Here, his work with Pramod Srivastava identified a novel mechanism of tumour rejection in mice, that still holds potential to treat certain human cancers.

The Government of Kerala later utilized his talent by first inviting him to enucleate and direct Rajiv Gandhi Centre for Biotechnology at Thiruvananthapuram in 1994 and later to avail of him as their scientific advisor. At Rajiv Gandhi Centre, he provided leadership to direct front line work on developing diagnostics and vaccines against a number of human and animal diseases that included hepatitis and tuberculosis.

In consonance with his contributions and stature, Dr. Das was an elected member to all the National Academies, was an office-bearer of several National Scientific Societies, served Indian scientific community, institutions and universities admirably until his sudden passing away on April 1, 2003 at Thiruvananthapuram, Kerala.

L. C. Padhy (E-mail: padhy@tifr.res.in)

Madan Mohan Dhingra
(1938-2002)

Dr. M.M. Dhingra joined TIFR in 1961 after a year's training programme of the Atomic Energy Establishment Training School. Dr. Dhingra did his Ph.D. in 1971 in physical chemistry. He was a member of the Chemical Physics Group till the time of his retirement in 1998 as a Professor. He specialized in the application of Nuclear Magnetic Resonance technique for the study of molecular structure of organic molecules and transition metal complexes in the initial phases of his career and later on devoted his efforts to elucidate the structure of biological molecules such as nucleic acids, peptides and proteins. He passed away in Delhi on December 5, 2002 and is survived by his wife, a son and a daughter.

Dr. Fali S. Mehta
(1923-2003)

People who know the Tata Institute of Fundamental Research (TIFR) often ask how a Dental Research Unit got established there? The only reply is that it was due to one man, Dr. Fali Sorabji Mehta.

Dr. Fali S. Mehta was a practicing dentist - a dentist par excellence. As an Honorary Dentist to the Department of Atomic Energy he established dental clinics and laboratories in several Atomic Energy affiliates. Due to Dr. Mehta, the dental care in the Atomic Energy and its affiliates has been of the highest standard.

Dr. Mehta's research at the Nair Dental College in the 1950s and early 1960s attracted a lot of attention. He teamed up with the late Prof. Jens Pindborg, an internationally renowned oral pathologist from Denmark and applied for a grant from the National Institutes of Health (NIH), USA to pursue his ambitious dreams of large-scale innovative research projects on oral cancer. The rest as they say is history.

He took the Basic Dental Research Unit to such heights of national and international recognition that it was designated as the World Health Organization Collaborating Center for Oral Cancer Prevention. People familiar with oral cancer research but not the TIFR often assume that the entire Institute is engaged in dental and public health research.

Dr. Mehta successfully competed for NIH funding for more than eight rotations in succession, spanning over 25 years. In the 1990s when the Indo-US Fund was finally exhausted, he was given a special award by the then U.S. Secretary of Health and Human Services, Donna E. Shalala, for running the longest Indo-US Collaborative Project in the health field.

Dr. Mehta was an active participant in all areas of dentistry. He was the Secretary of the Indian Dental Association for over a decade, was a member and President of the Dental Council of India for several terms, and he founded an NGO, the Indian Society for Propagation of Oral and General Health (ISPOGH) that operated a free dental clinic in a village, Ghodegaon, about 60 km from Pune.

Dr. Mehta was a leader with special qualities. He achieved goals by putting complete confidence in abilities of his people and he built up a top-notch team of research workers. The most memorable aspect of his personality, was his sense of humor. He could fool around, make most outrageous statement and get away with it – no one felt offended with him. Everyone who has ever worked with Dr. Mehta carries a deep sense of loyalty, affection and regard for him.

Dr. Fali S. Mehta expired on August 29, 2003. He left behind his loving wife Joan and his two sons, Sorab and Rustom. All including those who work in oral cancer research and those who come to the Dental Clinic at the TIFR will feel his absence.

Prakash C. Gupta (Epidemiology Research Unit, TIFR)



Dr. Raghuram receiving TAA – Harish Chandra Memorial Award (2001) from Mr. Rajiv Mody, CEO of Sasken Communications Technologies Limited, Bangalore



A section of the audience listening to Prof. B.M. Udgaonkar.



Dr. Subhendu Guha, President – United Solar Systems Corporation, USA delivering the TAA Fourth Public Lecture (December 20, 2002).

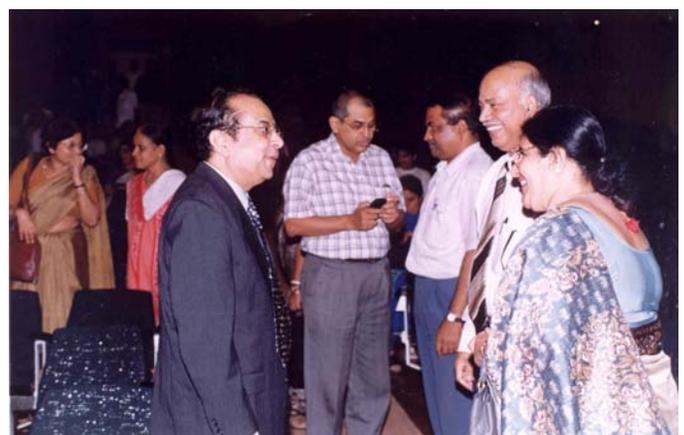


Professor B. M. Udgaonkar was the speaker at the TAA Fifth Public Lecture on the National Science Day 2003 (February 28, 2003)

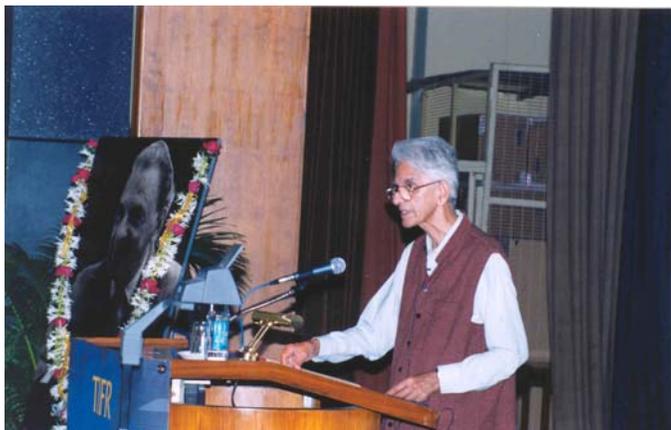
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Drs. S. Guha, P. Ganguly, L.C. Padhy and R. Pinto and Mrs. Pinto inside the Homi Bhabha Auditorium.



Prof. O. Siddiqi, FRS speaking on “the Sense of Smell” during TAA Sixth Public Lecture (July 29, 2003).



A near-full house for Prof. O Siddiqi's lecture on Bharat Ratna J.R.D.Tata's Birthday (July 29,2003)



Dr. Arun Paramkanti receiving TAA Geeta Udgaonkar Award for the year 2002

Quotes from Troika

There is no genuine knowledge of the Universe that is not potentially useful for man
-- H.J. BHABHA

We do vaguely realize that abstract scientific theories of today may well become practical realities of tomorrow
-- J.R.D. TATA

Among the many virtues and qualities that Dr. Bhabha possesses, is that he not only encourages people to do their best work, but he builds up young people
-- JAWAHARLAL NEHRU

(Courtesy TIFR Archives)

TAA and TIFR Endowment Fund

Initiatives by TAA have helped collate nuclear amounts to start (i) two new best Ph. D. Thesis awards, (ii) an excellence in Teaching Award, (iii) an excellence in Science Education award, (iv) commemorative medals for Patents/IPR holders of TIFR, (v) career development awards for research scholars of TIFR and (vi) cash awards for medal winners at international Science/Math Olympiads. *Contributors to TEF include families of (late) Prof. Harish Chandra, (late) Dr. Zeta Lobo, (late) Ms. Geeta Udgaonkar, Prof. S. S. Jha, Prof. B. M. Arora, Dr. Subhendu Guha, Shri. Kanwal Rekhi, Smt. Sudha Murty and Shri. N. R. Narayanamurty, Smt. Kumari and Shri S. D. Shibulal, Sarsen Communication Technologies Ltd., Infosys Foundation, Hindustan Levers, TIFR alumni and staff members, etc.*

We appeal to the members of TAA, and the staff and friends of TIFR to send in token contributions (one/two days salary per annum) to strengthen the corpus amounts of different awards so as to maintain the value of the awards vis - a - vis inflation, and to extend their longevity. New initiatives from alumni and friends of TIFR are also welcome. These activities are administered via TIFR Endowment Fund (TEF), contributions made to it are exempt from income tax (for details visit <http://www.tifr.res.in/~endowment/> or contact TAA).

Bouncing E-mails

The e-mails of the following members are bouncing. They are requested to inform Ms. Rodrigues (pietade@tifr.res.in) their correct e-mail address so that they can be reached without any problem.

Vjayanthi Chari; N. G. Patil; D. Paul Shashi; Sanjeev K. Waghmare; Girish Chandra; S. Kumaresan; Mangala V. Manohar; M.S. Vardya.

TIFR ALUMNI ASSOCIATION

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URL: www.tifr.res.in/~alumni

MEMBERSHIP FORM

Name		
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Address (Home)		
Email Address		Personal Homepage URL: http://www.
Phone (O)	Phone (Home)	Fax No
Year of joining TIFR:		Year of leaving TIFR:
Positing in TIFR: Student/Visiting Fellow/Scientific Staff/Academic Staff		Department while at TIFR:
If student, degree obtained through TIFR: M. Sc./M. Tech. /M. Phil. /Ph. D. (in year) _____		
We plan to make the above public on Alumni homepages. Do you have any objections to it? Yes No		
Cheque No. Life Membership: Rs. 1000 (USD 25) Signature (Optional for electronic submission):		Drawn on
TO BE FILLED IN BY THE ALUMNI OFFICE		
Membership fees paid	Date	Membership No.
DD/Cheque No.	Drawn on Bank	Wire Transfer: Yes No

Instructions

1. Please make the Demand Draft/Cheque payable to TIFR Alumni Association at Mumbai.
2. Write your name at the back of the cheque and mail it to: Ms. P. Rodrigues at Room B-114, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai 400 005, INDIA.
3. Personal cheques are also acceptable, however, an addition of Rs.40/- for bank charges for clearing outstation cheques, would be appreciated.
4. Please enclose 2 passport size photographs for getting a permanent laminated identity card valid for entry into TIFR. A scanned photograph with 300 dpi resolution sent electronically is also acceptable.

Instructions for sending US \$ 25 from USA electronically:

Wire Transfer using SWIFT mode to: Citi Bank N.A., New York, Branch Code number: CITIUS33 For account Number: 36072305 held in the name of Central Bank of India, Mumbai, India, for further Transmittal and credit to the Central Bank of India, Churchgate Branch, TIFR Extension Counter Account Number 3480 in the name of "TIFR Alumni Association".



Sasken provides compelling software solutions to network equipment manufacturers, terminal device manufacturers, test and measurement companies, semiconductor vendors and operators around the world. We add value by providing total telecom solutions through a unique combination of technology IP blocks and services. Our compounded annual growth rate is 18.35 per cent and our annual turnover for the financial year ending March 2003 was USD 22.8M. Sasken is ISO 9001 certified, and our process maturity is assessed at SEI CMM Level 5.



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