

this country. Many honours came his way, the title of Padma Bhushan was conferred on him in 1970. These had little impact on his profile. To the very end, he evinced keen interest in all aspects of the generation of academic excellence and novel intellectual forays. His weakness, synonymous with that of the IIT system, was the inability to foresee the emergence of new generations where materialism and obsession with individual well-being would overshadow the larger goals for which he strived.

The bulwark of the edifice that he has built, with firm conviction that the goals of an educational institution be for the pursuit of academic excellence; that the teachers must have the freedom to decide what to teach, whom to teach and who will teach; and that institutions of higher learning should remain totally autonomous, has witnessed cracks and is continually buffeted by strong equilibrating factors. If the academic community of our country met this continuous onslaught, that would perhaps be

the best tribute we can pay to this stalwart amongst men.

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Bardeen passes away

John Bardeen, a two-time winner of the Nobel prize died on 30 January at a Boston hospital. He was 82.

Bardeen was born on 23 May 1908 at Madison, Wisconsin. He won the Nobel prize for physics in 1956 with William B. Shockley and Walter H. Brattain for their joint invention of the transistor. He won the Nobel prize again in 1972 with Leon N. Cooper and John R. Schrieffer for development of the theory

of superconductivity.

Bardeen obtained the Ph.D. in 1936 in mathematical physics from Princeton University. As a staff member of the University of Minnesota, he served as a principal physicist at the US Naval Ordnance Laboratory in Washington DC during World War II. After the war he joined Bell Telephone Laboratories, where he did research on the electron-conducting properties of semiconductors.

This work led to the invention of the transistor, which replaced the bulkier vacuum tube in many applications and ushered in the age of microminiature electronic parts. In 1951 Bardeen joined the staff of the University of Illinois, in Urbana. The theory of superconductivity which is now called the BCS theory (from the initials of Bardeen, Cooper and Schrieffer) was first advanced in 1957; all later theoretical work in superconductivity is based upon it. Bardeen was also the author of a theory explaining certain properties of semiconductors.

INSA awards

Anil Kumar Bose Memorial Award 1990 to **Biman Bagchi**, IISc, Bangalore, in recognition of his research paper 'Molecular theory of solvation and solvation dynamics of a classical ion in a dipolar liquid' published in *Journal of Physical Chemistry* (1989, 93, 6996-7003).

Anil Kumar Bose Memorial Award 1989 to **K. V. R. Chary**, TIFR, Bombay, in recognition of his research paper 'Analysis of intrasugar interproton NOESY cross-peaks as an aid to

determine sugar geometries in DNA fragments' published in *FEBS Letters* (1988, 233, 319-325).

INSA Vainu Bappu Memorial Award 1989 to **Geoffrey Ronald Burbidge**, University of California, San Diego, USA in recognition of his outstanding contributions to our understanding of stellar nucleosynthesis and the enormous energy requirements of extragalactic radio sources.

The Bires Chandra Guha Memorial Lecture 1990 to **Nihal Kishinchand Notani**, BARC, Bombay. The work of

N. K. Notani is in genetic transformation, repair of DNA, and molecular mechanisms of genetic recombination.

The Sisir Kumar Mitra Memorial Lecture 1990 to **Mrinal Kumar Das Gupta**, Calcutta University, for his outstanding contributions in radio astronomy.

The Meghnad Saha Medal 1990 to **Chintamani Nagesa Ramachandra Rao**, IISc, Bangalore. C. N. R. Rao has made contributions in solid-state structural chemistry, chemical spectroscopy and molecular structure, surface science and high-temperature superconductivity.
