

## Nautam Bhagwanlal Bhatt (1909–2005)

Nautam Bhagwanlal Bhatt, recipient of the 'Padmashri' from the President of India in 1969, passed away peacefully at his home in Madison, New Jersey, USA on 6 July 2005. He was born in Jamnagar, Gujarat, on 10 April 1909. After high school in Bhavnagar and college studies at Samaldas College, Bhavnagar, Bhatt completed his undergraduate education at Gujarat College, Ahmedabad. He then obtained his MSc in physics under the Nobel Laureate, C. V. Raman, at the Indian Institute of Science (IISc), Bangalore. Following a year of teaching at Samaldas College, Bhatt was awarded a fellowship by the Maharaja of Bhavnagar to study at Massachusetts Institute of Technology, where he obtained his Doctorate in Science in 1939, for his research on the application of wave theory to architectural acoustics, under the theoretical physicist, Philip Morse.

Bhatt returned to India after his studies and spent a major part of the 1940s at IISc as a faculty member, and became Professor and first acting head of the newly created Department of Electrical Communications Engineering. In 1949, two years after India's independence, Bhatt joined the Defence Science Organization, where he remained until his retirement. He was one of the pioneers in the initial development of the Defence Science Laboratory in Delhi. From 1953 to 1957, his services were lent to the Council of Scientific and Industrial Research (CSIR), Government of India, to plan and build the Central Electronics Engineering Research Institute (CEERI) in Pilani, Rajasthan. He then returned to Delhi to organize a radar research unit, which evolved into the Defence Research Development Laboratory in Hyderabad, later headed by the

present President of India, A. P. J. Abdul Kalam. From 1962 until retirement in 1969, Bhatt established the Solid State Physics Laboratory in Delhi and was its founding Director. His role in founding several institutions at the forefront of scientific research in the decades around India's independence is unique among scientists in India.

Under his leadership and active involvement, the Defence Laboratories undertook several important research projects, including the development of semiconductor-grade silicon, development and fabrication of solar cells, and fabrication of helium neon and semiconductor lasers. Several of his own projects were classified, such as the development and deployment of proximity fuses for the Department of Defence.

Bhatt was a Senior Member of the Institution of Radio Engineers, New York (which later became IEEE); Fellow of the Institute of Physics (UK); Member, Institution of Electrical Engineers (UK); Founder Member and Fellow of the Institution of Telecommunication Engineers, India (later IETE); Life Member of the Acoustical Society of America, and Member of Sigma Xi Science Society (USA).

After retirement, he continued to pursue his passionate interest in science, engineering and acoustics. He spent a year as Scientific Advisor to Alembic Chemical Works in Baroda. In addition, he was a frequent advisor to the Union Public Service Commission of India, was on the advisory board of the Indian Institute of Technology, Madras and served on numerous Science Advisory and Policy Committees for CSIR and Government of India. In 2003, he received the Distinguished

Service Honour Award of the IETE, presented by the deputy Prime Minister of India.

Bhatt's other love was Hindustani classical music. He was an accomplished vocalist, who learnt the intricacies of the classical style from the late Ustad Lal Khan. At a benefit concert for India's independence movement, when he was a student at Gujarat College, Bhatt received a record eighteen requests for encore performances. He was a founding member of the Bhartiya Kala Kendra, and helped the nation's capital discover several young artists from across the country, such as Shiv Kumar Shukla and Rasiklal Andharia. As a long-standing member of the All India Radio's audition board with top musicians such as the late Ustad Amir Khan, he was responsible for rating and encouraging upcoming musicians, such as Budhaditya Mukherjee and Ashwini Bhide.

Bhatt's dual love for music and acoustics led him to design the acoustics of several theatres and concert halls. Noteworthy were the acoustical designs of the first two 70 mm theatres in India – Sheila and Odeon in Delhi, as well as Birla Matushri Sabhagruha in Mumbai. In addition, he designed the acoustics of several concert halls specifically for Indian classical music for a more natural sound, which did not require the use of powerful audio systems.

Bhatt is survived by his wife of 58 years, Indira, two sons, two daughters, ten grandchildren and eleven great-grandchildren.

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