

Paramasivam Natarajan (1940–2016)

Paramasivam Natarajan who was a pioneer in inorganic photochemistry specializing in the photochemistry of coordination compounds passed away on 18 March 2016 at the age of 76. Besides his scientific contributions, he is an institution builder. He established the Chemistry Department at the Post-Graduate Centre in University of Madras, Tiruchirapalli, which later became the Bharathidasan University. He served as the founder Director of the DST-funded National Centre for Ultrafast Processes at the University of Madras for ten years (1997–2006). His institution building did not stop with Universities, but continued at the Central Salt and Marine Chemicals Research Institute (CSMCRI), a CSIR Laboratory at Bhavnagar in Gujarat.

Natarajan was born on 17 September 1940 in Madras (now Chennai) to Paramasivam and Chellammal. After graduation in chemistry from the University of Madras (1959), he worked there as a lecturer for two years (1959–61). He completed his post-graduation from Banaras Hindu University, Varanasi in 1963 and then worked as a lecturer in NGM College in Pollachi (1963–64). He continued his academic career at Varanasi working as a junior research fellow (1964–65) and as lecturer, and then moved to the Jawaharlal Nehru Institute of Post-Graduate Medical Education and Research in Pondicherry (1965–66). He then went to the University of Southern California, first as an NSF trainee, then as a research assistant and teaching assistant (1966–71) before completing his Ph D at the University in 1971. He moved to the Wayne State University in 1971 as a post-doctoral research associate with J. F. Endicott.

Returning to India in 1973, he became a CSIR Pool Officer and then reader in physical chemistry at the University of Madras (1973–77). In 1977 he was appointed as professor and head of the Department of Chemistry at the Madras University PG Centre in Tiruchirapalli (1977–82). In 1982 he moved over to the main University in Tiruchi (Bharathidasan) to take up the position as professor and head of the Department of Inorganic Chemistry and continued in this position until 2001. During this period, he took lien from the University to take over as Director of CSMCRI

(1991–97). He also founded the National Centre for Ultrafast Processes in the University of Madras in 1997 and continued there until 2006.

His research focus was on the use of flash photolysis and single photon counting fluorimetry in the study of photochemical reactions. One of the highlights of his contributions is chemically modified electrodes for polymeric photovoltaic application which was published in *Nature*¹. He mastered inorganic photochemistry, working with A. W. Adamson, who is considered as the father of inorganic photochemistry and initiated research in this unique subject in India after his return from USA.



Natarajan started his research career in inorganic photochemistry and subsequently contributed to many diverse fields in the area of photochemistry such as polymer dynamics in aqueous solution using fluorescence techniques, photo-physics and photochemistry in organized media, flash photolysis studies of organic and inorganic systems using pico- and femto-second lasers and photoelectrochemistry with applications to solar energy conversion.

Natarajan showed that when macromolecular dyes are coated onto an electrode and photolysed, the characteristics of the electrode reaction change completely and high current density is observed even when film thickness is just 10 μm . Normally polymer films of 10 μm thickness have very high resistance and charge migration is practically nil through such films. The first report about this cell, published in *Nature*, shows much potential for solar energy conversion using chemically modified electrodes.

His contributions have been published in journals like *Nature*, *JACS*, *JPC*, *Inorganic Chemistry*, *Chemical Communications* and others. He published more than one hundred papers and has several patents. He served as member of the editorial boards of several journals. More than thirty students obtained their Ph D degree under his supervision. As the Director of CSMCRI, Natarajan contributed to promote new areas of research, commercialized the technologies developed, the most notable being the transfer of know-how developed by CSMCRI scientists for detergent grade zeolite to NALCO. He was a member and Chairman of PAC for Inorganic Chemistry at DST and Chairman of Research Committee for Chemical Sciences in CSIR and a member of SERC in DST and IUPAC committees.

Natarajan was awarded the Shanti Swarup Bhatnagar Prize for chemical sciences (1984) and elected to the fellowships of the Indian Academy of Sciences (1987), Indian National Science Academy (1988), IUPAC, Society of Biosciences and other state Academies. He was given the Best Teacher Award by the Government of Tamil Nadu, the Jawaharlal Nehru Birth Centenary Lecture Award of INSA, Acharya P.C. Ray Award by the Indian Chemical Society, the DST-Ramanna Fellowship, Sigma-XI Society award in USA, INSA-Senior Scientist and INSA-Honorary Scientist. He held the Sir M. Visvesvaraya Chair at the Mysore University and Pandit Jawaharlal Chair at the University of Hyderabad.

Natarajan leaves behind his wife (Sivabagyam), two daughters (Shiva Sukanthi and Shakthi) and their families.

1. Tamilarasan, R. and Natarajan, P., *Nature*, 1981, **292**, 224–225.

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