

Remembering Professor Girjesh Govil



On Tuesday, October 12, 2021 Professor Girjesh Govil (1940–2021), formerly at the Department of Chemical Sciences, TIFR, entered into eternal life. In June 2021, the octogenarian had gone to the US to spend a few months with his children. There he passed away, sending a shock wave among all of his acquaintances. The illustrious career of a brilliant scientist, an inspiring teacher, an outstanding leader and an institution builder thus wound to its end, leaving a major void in the scientific community.

Born in Khurja (dist. Bulandshahar, U.P.), Govil had a brilliant academic career. He did his B.Sc. from Lucknow University in 1956 and M.Sc. from Allahabad University in 1958. He then joined the prestigious Training School at the Atomic Research Establishment, Bombay (now BARC) in the year 1958 and, having topped his batch, decided to join the Tata Institute of Fundamental Research (TIFR) the following year. He obtained his Ph. D in the year, 1963, working under the mentorship of Prof. S. S. Dharmatti, the pioneer of NMR in India and the inventor of NMR Chemical Shift. Thereafter, the young scholar carried out his post-doctoral studies at the National Physical Laboratory (United Kingdom) and the National Research Council (NRC), Canada. After his return to TIFR, he established himself as an independent researcher, eventually becoming Senior Professor and Chair of the Chemical Physics Group (now the Department of Chemical Sciences) and the Dean of the School of Natural Sciences. Prof. Govil superannuated from TIFR in 2003, but continued working, first as a Raja Ramanna Fellow, and then as INSA Golden Jubilee Research Professor, till 2018.

At TIFR, Govil laid the foundation for the Molecular Biophysics program in 1969, with a focus on determining the structures of biomolecules. He foresaw that the establishment of a state-of-the-art NMR facility was crucial to remain at the forefront of research. In this endeavour, he and the late Prof. C. L. Khetrpal (a TIFR alumnus working at the Raman Research Institute), Bangalore) joined forces to obtain funds from the Department of Science and Technology (DST), and established the first Superconducting 270 MHz NMR spectrometer at the IISc, Bangalore (1978). This enabled advanced research in NMR per se, and in its applications including biomolecular NMR, aiming to study larger biomolecules. At TIFR itself, Govil established the National Facility for High Field NMR at TIFR in 1983 by procuring the first 500 MHz NMR spectrometer in the country. The success of these facilities triggered substantial investments by the Government of India and led to the establishment of more than 500 NMR instruments, as of today, in different parts of the country. Gradually, NMR came to be recognised as an indispensable tool for chemists, physicists, and biologists. Many places acquired four or five NMR spectrometers to satisfy the growing demands. Under his guidance, TIFR acquired a 500 MHz in 1983; a 600 MHz in 1993-94; a 800 MHz in 2003-05; and a 700 MHz NMR spectrometer in 2007-08, using funds provided by the DST, DBT, CSIR and DAE. Govil ensured that all the spectrometers at TIFR ran round the clock, and were available to users around the country. For the DST, the National Facility for High Field NMR became a proud platform.

Prof. Govil, along with his colleagues at TIFR, made substantial original contributions in the broad area of structural biology – structure and dynamics of long DNA duplexes, triplexes etc,

structure and dynamics of proteins, software development for automated analysis of multidimensional NMR spectra of proteins. His work demonstrated that single-stranded nucleic acids have the intrinsic tendency to form helices, and the H-bonding and base-stacking interactions provide additional stability to the higher order structures. His notable work in *in-vivo* NMR was the study of the motility of spermatozoa. Simultaneously, Govil ventured into applied research, namely Biochemical Fuel Cells and Molecular Electronics, which yielded a few patents. He had more than 250 research publications, and 5 books, which are highly cited. His books are used by many researchers for teaching fundamental principles and applications of NMR.

Prof. Govil also took initiatives towards Education and Capacity Building in the less-developed countries. He served on a number of national and international committees for chemistry and biophysics and was involved in many international activities, such as organising International Conferences, Workshops, and training scientists from neighbouring countries. He played major roles in international bodies such as International Conference on Magnetic Resonance in Biological Systems (ICMRBS), International Union of Pure and Applied Biophysics (IUPAB), Asian Biophysics Association (ABA), Royal Society of Chemistry (West India Section), and NASI (West-India Section). He was, in fact, Vice-President of the IUPAB and served as Chair of the ICMRBS Council. Having established a good rapport with the international community, he always succeeded in organising many important international conferences in India. In the early 1980s, he, along with Professor M. Vijayan (IISc Bangalore), revived the Indian Biophysical Society, which was almost on the verge of disintegration. Later in 1991, he along with Prof. Khetrpal spearheaded the establishment of the National Magnetic Resonance Society (NMRS), India. Govil also contributed immensely to the Indian Science Congress and the Indian Chemical Society. During his three-year tenure (1989-92) as the Secretary of the Indian National Science Academy (INSA), he managed to bring in many reforms in the functioning of the Academy.

The late scientist's contributions were recognised by numerous awards and honours, including the S.S. Bhatnagar Award, the FICCI award, the Goyal Award, the R.K. Asundi Memorial lecture, the P.C. Ray Memorial Lecture, the Lifetime Achievement Award of the Indian Chemical Society and also of the Indian Science Congress Association, the N.R. Dhar Award, the J.C. Ghosh Memorial lecture, to name a few. He was elected Fellow of all the three Science Academies in India and was also a Fellow of The World Academy of Sciences (TWAS) and of the International Society of Magnetic Resonance (ISMAR).

Girjesh Govil was a kind, patient and soft-spoken person, who never lost his temper and loved all his associates like members of his own family. He is survived by his wife Anuradha, son Anurag (Research Scientist, Smith Detection, USA), and two daughters, Shalini (Vice-President, Google, USA) and Shivani (Chief Product Officer, CCC Intelligent Solutions, USA). The undersigned, our families and all our students join in conveying our deepest condolences to the bereaved family. Professor Govil's legacy will continue to guide the scientific community through us and all his students, friends, and family forever.

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