Dave Thirumalai Biography

November 29, 2022. Patrick Charbonneau

Devarajan Vinjimoor (Dave) Thirumalai (June 6, 1956—) was born in Tamil Nadu, India.

Thirumalai attended the Indian Institute of Technology, Kanpur, where he obtained a MSc in engineering (1977) for a thesis entitled “The E.S.R. Spectra of Some Aromatic Nitro Compounds” under the supervision of the late Prof. P. T. Narasimhan. He pursued his studies at the University of Minnesota, where he obtained a PhD (1982) for a thesis entitled “Effective Potential Studies of Electron-Atom and Electron-Molecule Collisions”, under the supervision of Donald G. Truhlar. He was then postdoctoral research associate with Bruce J. Berne at Columbia University (1982-1985), before joining the University of Maryland, College Park, as Assistant Professor at the Institute for Physical Science and Technology. There, he climbed through the ranks (Associate Professor, 1989; Professor, 1993; Distinguished University Professor, 2010), before moving to the University of Texas at Austin (2016), where he is currently the Collie-Welch Reagents Chair and chair of the Department of Chemistry. He also serves on the editorial boards of *The Journal of Chemical Physics* (since 2008) and of *Protein Evolution, Design, and Selection* (since 2005).

Thirumalai was trained as a chemical physicist, mostly focusing on the theory of electron-related problems. Upon colliding with Ted Kirkpatrick at Maryland, however, he dived into the glass problem. He led some of the early numerical simulations of supercooled liquids and, together with Kirkpatrick and Peter Wolynes, laid the basis for the modern theory of structural glasses, building on that for spin glasses. This effort culminated with a series of seminal collaborative works in 1989. Afterwards, Thirumalai mostly left the field and worked on various biophysics problems.

Thirumalai received a Camille and Henry Dreyfus award (1985-1987), an Alfred P. Sloan Fellowship (1986-1988), Presidential Young Investigator Award (1987-1992). He is also a fellow of the Royal Society of Chemistry (2009), the Biophysical Society (2014), and the American Physical Society (2016). For his work, he has received the Chemical Research Society of India Medal (2016), the ACS Theoretical Chemistry Award (2016) “for outstanding contributions to physical and biophysical chemistry, especially work on protein and RNA folding, protein aggregation, and effects of molecular crowding in cells”, and the Irving Langmuir Award in Chemical Physics (2019) “for the development of analytical and computational approaches to soft-matter systems and their application to the transitional behavior of supercooled fluids and glasses, folding dynamics of protein and RNA biopolymers, and functioning of molecular motors”. For his work in biophysics of proteins and RNA, he received the Hans Neurath Award from the Protein Society (2019), for which the citation reads: "Professor Thirumalai has been a pioneer in advancing our understanding of biomolecular actions, particularly protein and RNA folding, and the basis for how molecular motors convert energy to motion. Professor Thirumalai, one of the top theorists in delineating the principles of protein and RNA folding, is unique in driving and

interpreting experiments, and collaborating with experimentalist colleagues. He was the first to quantify the heterogeneity and bumpiness of protein folding landscapes, through the definition of a glass temperature and its ratio with the folding temperature."