

Charusita Chakravarty (1964–2016)

It is difficult to believe that Charusita Chakravarty is no more. Born in Cambridge, Massachusetts, USA on 5 May 1964 as the only daughter of the economists Sukhamoy and Lalita Chakravarty, Charu grew up in a liberal academic environment in Delhi. She chose to give up her American citizenship and become Indian when she was in her twenties¹.

Charu was brilliant in her studies and this was reflected in her topping the Delhi Higher Secondary Board. She was selected as a National Science Talent Scholar and also cleared the highly competitive Joint Entrance Examination (JEE) of the IITs in 1982. (In those days there was no coaching!) She wanted to join the five-year integrated M Sc programme in chemistry in IIT Kanpur, even though her JEE rank made her eligible to join the B Tech programme in one of the engineering disciplines. However, at the suggestion of a family friend and that of her father she joined B Sc (Hons) in chemistry in St. Stephen's College, Delhi. After graduating from Delhi University with a gold medal in 1985, she joined Cambridge University, UK, to do the Natural Sciences Tripos, receiving the B A (Hons) degree in Natural Sciences in 1987. She then joined the Ph D programme at Cambridge under the guidance of David Clary. Her thesis was on the spectra and dynamics of Ar–OH, an open shell system that involved a lot of nuances. After receiving her Ph D degree in 1990, she went to the University of California, Santa Barbara, USA for post-doctoral training with Horia Metiu. After returning to India for a brief period, she went back to Cambridge for an independent postdoctoral position for a year as a Gulbenkian junior research fellow, only to return to India for good in 1994.

Initially, some of the Indian institutions were not ready to offer her a faculty position as she did not have a Master's degree, despite the fact that she had a PhD degree from Cambridge. IIT Kanpur, however, had no such issues and offered her a faculty position in the Chemistry Department. But, she was reluctant to accept it as she wanted to be in Delhi since she had married Ram Ramaswamy of Jawaharlal Nehru University (JNU) and her mother was teaching eco-

nomics in Indra Prastha College in Delhi University. Finally, in 1994, IIT Delhi offered her the position of an assistant professor in the Chemistry Department, where she rose to the rank of a Professor in 2006 and stayed on till the end.

With an excellent pedigree and academic credentials, excellence in research came naturally to Charu. To get started with her research work, she submitted a research project to the Department of Science and Technology (DST), New Delhi. It was so well written that one referee commented that it was one of the best written proposals that he had seen. Funding, naturally was not a problem.



Charu's initial research centred around the characteristics of atomic and molecular clusters, anomalous properties of water and ionic liquids, phase transition in classical and quantum clusters, diffusion in constrained media and related phenomena. In the early years of her career in India, she collaborated with Ram in using spectral analysis tools. Later, she guided a number of M Sc and Ph D students. Single-author papers were the hallmark of Charu's research during the period 1995–2005. She was an expert in using path integral Monte Carlo simulation to unravel quantum mechanical effects in the properties of atomic and molecular clusters. She has published

more than 90 research papers in refereed national and international research journals.

The quality of her research output is reflected in the large number of citations her papers received and in the recognition from her peers. She was a referee for several scientific journals. She was a member of the Editorial Board of *Pramana – Journal of Physics* (2006–08), *Journal of Chemical Sciences* (2008–11), and *Physical Chemistry and Chemical Physics* (2012–). She was a member of various scientific committees in the country, particularly of the Science Academies and DST and the Council of Scientific and Industrial Research (CSIR), New Delhi.

She was awarded the Young Scientist Medal of the Indian National Science Academy (INSA), New Delhi in 1996, and selected as Young Associate of the Indian Academy of Sciences (IAS), Bengaluru. She was made an Associate Member of the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy (1996–2003). She received the B. M. Birla Science Prize in 1999 and the Swarnajayanti Fellowship in 2003. The coveted Bhatnagar Prize in Chemical Sciences from CSIR followed in 2009. She was elected Fellow of IAS, Bengaluru in 2006 and INSA, New Delhi in 2015.

In a country in which women scientists have difficulty in pursuing their careers, Charu managed to balance work with family. Her daughter Krithi was born in 2000. However, in 2013 nature dealt Charu a cruel blow: she was diagnosed with breast cancer. Charu took medical leave and got treated in Hyderabad where her husband was then Vice-Chancellor of the University of Hyderabad. When she returned to her job at IIT Delhi, check-ups revealed a relapse of cancer. Her recovery went through ups and downs. However, she made it a point to participate in the induction ceremony of INSA Fellows during its Annual Meeting at IISER Bhopal on 30 December 2015. Finally, she succumbed to cancer and breathed her last on 29 March 2016, leaving Ram and Krithi behind.

While her thesis supervisor David Clary recalls her as an excellent Ph D student and research fellow in

Cambridge, her collaborator Pablo G. Debenedetti, Princeton University, USA, sums up nicely in his condolence message to her family, '... there is a very large community of scientists (Charu's students, colleagues, collaborators, friends) – who will always remember Charu, both as a wonderful scientist, and,

more importantly, as an extraordinary human being'.

May she rest in peace.

1. Chakravarty, C., In *Lilavati's Daughters The Women Scientists of India* (eds Godbole, R. and Ramaswamy, R.), Indian Academy of Sciences, Bengaluru, 2008, pp. 71–74.

*Indian Institute of Science Education and Research Mohali,
Sector 81, Knowledge City,
SAS Nagar,
Manauli 140 306, India
e-mail: nsath@iisermohali.ac.in*

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