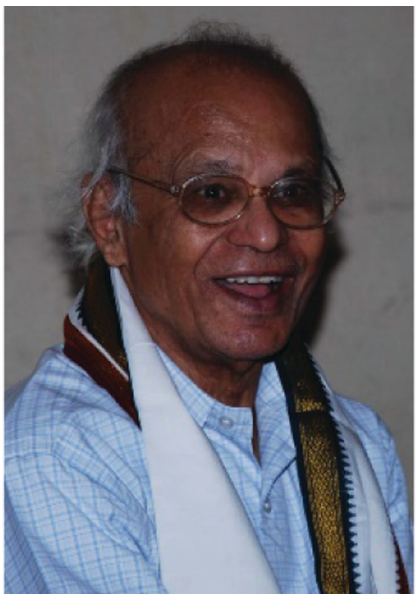
Sunil Kumar Podder (1937–2023)

Prof. Sunil Kumar Podder passed away on 22 April 2023, in early morning at the age of 86. He started his research career from the Department of Biochemistry of Indian Institute of Science (IISc), Bengaluru, in 1972 working in the area of protein–nucleic acids interactions. Later, he shifted to the area of specificity of protein–carbohydrate interactions, particularly at the membrane interface. During his scientific journey, he mentored about 15 students for Ph.D., worked with several research associates and project assistants and wrote more than 100 research articles in peer-reviewed journals. Sunil Podder was one of the pioneers of Biophysical Chemistry in India. For his contributions, he was awarded the prestigious Shanti Swarup Bhatnagar prize in 1982. Even after formal retirement in 1997, he used to come to the Biochemistry Department regularly till 2002. He interacted with the students and associates of C. Jaybhaskaran and Anjali Karande and later he collaborated with P. K. Das of the Department of Inorganic & Physical Chemistry (IPC) till 2015. He started withdrawing himself slowly after that, although remained agile and active until the COVID outburst.

Sunil Podder came from a remote village of Barisal district, now in Bangladesh, to the city of Kolkata in early nineteen fifties. He did his undergraduate in chemistry from the then Ripon College, now named as the Surendranath College. He did his Master's in physical chemistry from University of Calcutta. Immediately after completing M.Sc., he joined an eminent physical chemist, Sadhan Basu for his Ph.D. in the Rajabajar Science College campus of University of Calcutta, to work on the viscoelastic properties of polyvinyl pyridine based polymers. After Ph.D., he went to the University of Pittsburgh for his first postdoc in organometallics. He often used to mention 'I badly needed money at that time to raise three of my younger brothers and sisters'. After a couple of years, he moved to the Max Planck Institute at Gottingen, Germany in 1963, to the laboratory of Manfred Eigen to work on fast reactions during chemical evolution of life. Eigen received the Nobel Prize in 1967. Sunil Podder worked with him for 8 long years from where he wrote 6 single author–papers in different journals on his work on the kinetics of nonenzymatic recognition of GC base pairs, their cooperativity and stability of GU wobble pairs (*Nature New Biology*, 1971, **232**, 115). He also worked in between, with Ignacio Tinoco of the University of California, Berkeley, to learn enzymatic synthesis of oligoguanylic acids, to complement his work at the Max-Planck Institute.



Early 1970s have seen many important discoveries in life sciences, molecular biology in particular. That was the time Sunil Podder was looking for a job in IISc, Bengaluru. He was caught in between the classical biochemists and the physical chemists of India, neither of whom felt comfortable with the language of molecular biology at that time. Around then, a school of biophysics was being built at IISc, emphasizing on the role of the 3D structure of biomacromolecules and the structure–function relationship under the leadership of G. N. Ramachandran. Sunil Podder, with expertise and experience in the state-of-the-art techniques to study the kinetics of fast reactions, was enthusiastic to look for collaboration with the new unit. One of the first ESR-based temperature jump experiment was done by him in collaboration with Kasthurirangan of the Tata Institute of Fundamental Research. At that time, one of us (DC) joined Sunil Podder for Ph.D. degree in an inter-disciplinary programme, registered with IPC department. DC was his first Ph.D. student and what a rewarding experience it was! His reading habits, style of addressing scientific questions influenced me most. During this period, he met Bimal K. Bachhawat of the Christian Medical College, Vellore. Along with A. Surolia, then working as a graduate student with Bachhawat, Sunil Podder performed one of the most important and elegant experiments done from any Indian laboratory. Together they wrote a bench-mark paper on the specificity of interactions of a carbohydrate binding protein with a glycosphingolipid at the membrane interface (*Nature*, 1975, **257**, 802). However, Sunil Podder was finding it difficult to work on protein–nucleic acid interactions in the absence of suitable infrastructure and necessary funding. One of his elegant works on the specificity of protein–nucleic acid interactions is on the solubility of amino acid and nucleosides (*FEBS Lett.*, 1978, **96**, 90). After writing an important paper on biochemical evolution in *Origins of Life* in 1984, he stopped working in the area of protein–nucleic acid interaction and concentrated on plant lectins, the toxins and agglutinins – their carbohydrate specificity, energetics and membrane interactions.

He would let his students and associates learn science in the hard way, with a broader perspective, try looking at the larger picture through a tough training, critical but careful mentoring. He would always proclaim – 'my numbers must be right' – they could be a binding constant, a rate constant or a thermodynamic parameter. He made his students read scientific literatures compulsorily in the era of no internet. His model of doing experimental science in a not-so-affluent-laboratory was to do ~~a~~ solid homework, before it could be tested at the laboratory bench. He would make students read standard journals in the field like Biochemistry, *Journal of Biological Chemistry*, *the BBAs*, *Biopolymer*, *Biochem. J.* more seriously than *Nature* or *Science*. We often repeat a quote of Podder to a student of Biochemistry – 'Don't read *Nature* and *Science* ("you won't understand much about the details of the experiments"), read *JBC* and *Biochemistry*'. In the current scenario, when boundaries between chemistry and physics or chemistry and biology are getting smudged, Sunil Podder practiced the same during his entire scientific career starting from early seventies till the year 2002.

As a person, he was extremely friendly. One could discuss anything and everything

with him. He was simple living, a scholar who would wake up every morning at 4.30 AM for his reading sessions, and then ready for the day with a scooter. He was a library addict with interests ranging from cell biology to molecular biology to physical chemistry. He would read the *Journal of Cell Biology* and the *Journal of the American Chemical Society* with equal interest. Critical as Sunil Podder has always been, the scientific community around him would miss those healthy and incisive criticisms as well as appreciations from him. He was a successful family man, with affectionate wife Uma, now a retired Professor from the Agricultural University of Bengaluru, daughter Arundhati and son Aniruddha along with three grandchildren. He will be remembered by most of his students and colleagues as an academician, a bright scientist with sharp mind filled with many newer ideas.

ABHIJIT CHAKRABARTI[1,*]
DIPANKAR CHATTERJI[2,*]

[1]*School of Biological Sciences, Ramakrishna Mission Vivekananda Research and Educational Institute, Kolkata 700 103, India*
[2]*Molecular Biophysics Unit, Indian Institute of Science, Bengaluru 560 012, India*
**e-mail: abhijit.bio@gm.rkmvu.ac.in; dipankar@iisc.ac.in*

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