

CRYSTALLIZING SOLUTIONS

The early challenges of crystal engineering should remind young scientists to see their dreams “with clarity, conscience, dedication and quality”.

✍ by Gautam R. Desiraju



Gautam Desiraju served as president of the International Union of Crystallography from 2011-14, and in that role helped organize the 2014 International Year of Crystallography. A structural chemist, he was elected a TWAS Fellow in 2002. He is a recipient of the Humboldt Forschungspreis and of the TWAS Prize in chemistry (2000). He sits on the editorial boards of the *Journal of the American Chemical Society*, *Angewandte Chemie* and *Chemical Communications*.

I returned to India to an independent position at the fledgling University of Hyderabad 35 years ago. My doctoral training in the United States had included some exposure to crystallography, but being essentially a chemist, I looked at the intersection of chemistry and crystallography. I began thinking about a new subject called crystal engineering, the design and synthesis of functional solids. The design tools in this engineering exercise are intermolecular interactions, the most prominent of them being the hydrogen bond.

My research in Hyderabad spanned three decades and I suppose my group made adequate contributions to crystal engineering, highlighting the role of the hydrogen bond and its wider ramifications in structural chemistry. A few colleagues in other far-flung locations across the world were also thinking on similar lines and the early work from our laboratories triggered much subsequent interest in the subject. Crystal engineering is in the scientific mainstream today with practitioners everywhere, including in the developing world — India of course, but also Brazil, China, Iran, Malaysia, Pakistan, South Africa and Vietnam.

It was not easy to do the best competitive science where I worked. The subsistence equipment of chemical crystallography is the single crystal X-ray diffractometer, but this facility remained a mirage in my university for ages. India, as Jawaharlal Nehru once famously said, is a rich country in which poor people live. Corruption is a multi-headed hydra in the developing world. Sycophancy and nepotism pervade in the making of appointments, in the

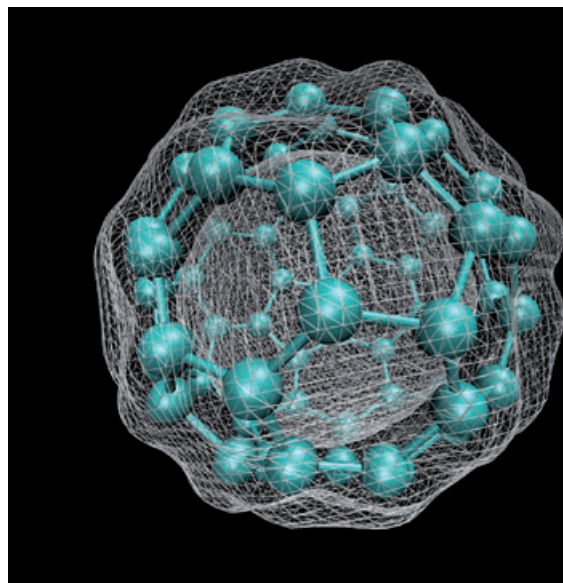


Photo courtesy: Isaac Tambllyn, University of Ontario, Canada

giving of awards and fellowships, in showcasing a single institution or a single individual through extremely labyrinthine and skewed funding patterns, and the fate of the scientist who shuns this stultifying paradigm is the stuff of myth.

I can recount the past with some amusement now, but would mostly like to signify to young researchers across such nations that to see the dream with clarity, conscience, dedication and quality is to surmount all odds. As the mass of genuine work burgeons, there will fall into place a value system that is robust, because it is completely selfless and for the higher good. To establish this bedrock however, is the challenge at hand and this is where an organization like TWAS comes into play and assumes special significance. ■