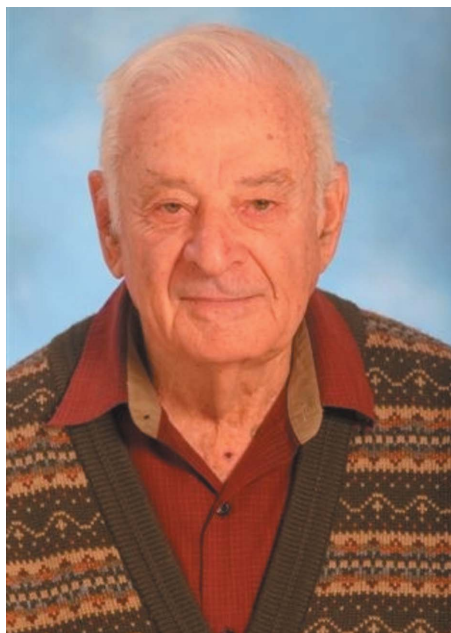


## Frank H. Herbststein (1926–2011)



Frank H. Herbststein, Professor Emeritus at the Technion–Israel Institute of Technology, died on 23 March 2011.

Frank was born in Cape Town in the Union of South Africa (as it then was) on 3 July 1926. He obtained his BSc degree from the University of Cape Town, came to Israel in 1948, received a PhD from the Hebrew University and later a DSc from the University of Cape Town. He went to MIT on a post-doc in 1950, returned to South Africa in 1956, and then returned (permanently) to Israel in 1965 as a Professor of Chemistry at the Technion. In 1992 he was honored by election as a Foreign Associate of the Royal Society of South Africa. In 2007 he was honored by being chosen to receive the Fankuchen Award of the American Crystallographic Association.

As a PhD student Frank was involved in the crystal structures of overcrowded aromatic hydrocarbons and the three-dimensional structure of phenazine. At that time it took a few months just to draw a Fourier electron-density map. Frank described himself as the third crystallographer in the science history of Israel (after Schmidt and Alexander). After 15 years abroad he based his career in Haifa after he was invited to add an X-ray diffraction facility to the Department of Chemistry at the Technion. To his previous interests he added much more sophisticated approaches to topics that he had touched on earlier. Phase transitions was one of these. Second-order transitions were the first to be developed; the simplest of these was the second-order transition of naphthazarin C, studied in collaboration with Curtin and Paul in Urbana and Mogens Lehmann in Grenoble, which led on to a study of the *cis*-enol system benzoyl acetone over the temperature range 9 to 300 K with Finn Larsen's group in Aarhus. His interest in the second-order phase transition at  $\sim 160$  K in the charge-transfer compound pyrene-pyromellitic dianhydride was greatly extended, including a structure determination at 19 K, during a sabbatical at Caltech with R. E. Marsh and Sten Samson. This led to a review of second-order transitions published in *Crystallographic Reviews* [(2000), **5**, 181–226]. When Frank was asked what was his favorite among the variegated research

projects with which he had been associated over the years, he would undoubtedly say that it was the 'spontaneous deformation of protochatechuic acid (3,4-dihydroxybenzoic acid) monohydrate (PCA·H<sub>2</sub>O) crystals: crystallographic aspects' [Agmon & Herbstein (1983). *Proc. R. Soc. London Ser. A*, **387**, 311–336], despite its being one of the least cited papers in the crystallographic literature. When he was asked what his favorite crystals were he answered that trimesic acid and the various polyiodides (and polyiodines) ran neck and neck. Frank's willingness to write a review on '*Crystalline Molecular Compounds: Chemistry, Spectroscopy and Crystallography*' ended after a few years as a two-volume monograph entitled '*Crystalline Molecular Complexes and Compounds (Structures and Principles)*'. The book was enthusiastically received by the crystallographic community; here is a quotation by one of the book's reviewer (Israel Goldberg).

'... this publication is an invaluable resource of information on, and an excellent reference to, *Crystalline Molecular Complexes and Compounds*. It contains broad-scope coverage of the structural chemistry and physical properties of such materials, aiming at a wide academic audience. The well organized text presents the scientific evidence and the author's perspective on the subject in an attractive manner and easy to read language, while avoiding as much as possible the use of too specific technical terms. Clear definitions and classification of the discussed compounds into sub-classes at the outset, accompanied by instructive introductory background sections on these groups in the respective chapters as well as by concise conclusion paragraphs, ease on the reader to grasp step by step the information wealth contained in this account. The nearly 600 illustrations and diagrams in the text are an excellent aid in this endeavor'.

Frank held many important positions in the academic administration of the Technion. Among them Dean of the Department of Chemistry, Dean of the Graduate School, a Vice President for Development. Frank was a dear person, honest, gentle, kind and was always interested in listening to younger research scientists. He was a man of work and continued his involvement in crystallographic research for more than 16 years after his retirement. His many friends and former students mourn his passing.

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