

Obituary

Prof H M 'Tiny' Powell

PROF H M "TINY" POWELL, Emeritus Professor of Chemical Crystallography at Oxford University, who has died aged 84, was the "father" of inclusion chemistry.

This branch of chemistry involves atoms or molecules trapped, rather than bonded, in spaces in the lattice structures of other compounds.

Powell uncovered this phenomenon in the 1940s when he turned his attention to molecules like quinol – an aromatic benzene compound – with sulphur dioxide or argon.

His research led to the discovery of what he called "clathrate" compounds, in which a molecule (of sulphur dioxide, for instance) is trapped within the holes the crystal structure of framework of other molecules, such as quinol.

The whole concept of one molecule being "included" in another, and the subject of "inclusion chemistry" was the result of Powell's pioneering work. The zeolite catalysts used in the petrochemical industry or in water softeners today owe a great deal to his discoveries.

Herbert Marcus Powell was born on Aug 7 1906 and educated at Henry VIII School, Coventry, and won a scholarship to St John's College, Oxford.

Although he was known to all his colleagues as "Tiny", Powell's stature as a scientist was high from his earliest days as a research chemist. After taking a First in Chemistry in 1928 he was appointed departmental demonstrator in mineralogy.

He went on to become first University Demonstrator and then Reader in Crystallography before being given a personal Chair in 1964.

Powell's long research career encompassed several overlapping phases. As an undergraduate, he became interested in the different shapes taken by compounds of the same chemical formula.

At this time Powell had to rely on optical methods of crystallography – the science of determining the molecular structure of crystals. But in the early 1930s he helped to set up the first X-ray crystallography apparatus in Oxford, which, with its shorter wavelengths, could see much finer detail.

He wrote a paper on X-ray structure determination with his first research student, Dorothy Crowfoot – later to become Prof D M C Hodgkin, OM, FRS, and to win a Nobel Prize for her work on the structures of compounds.

In 1939 Powell co-wrote a paper which established the "valence shell electron-pair repulsion model" for determining the shapes in which atoms join together to make molecules. This work laid the foundation for the explanation of the geometry of molecules.

In the 1960s Powell did further work on compounds and complexes of unusual combination numbers. Throughout his career he found his own problems, rather than wait for others to bring them to him.

Powell was an excellent linguist. He spoke Russian, French and German fluently, and

had a good working knowledge of many others – including Mandarin Chinese and Cantonese.

In 1960 he wrote a paper on how to read Japanese chemical papers without having to learn the language which immediately became required reading among Western chemists.

He was a talented artist and caught a number of striking likenesses in pencil and charcoal. He was also said to have written at least one detective novel under a *nom-de-plume* – a rumour Powell evidently enjoyed but would neither confirm nor deny.

A charming, shy man, with a dry wit, Powell was scrupulously honest in all his dealings. He was elected a Fellow of the Royal Society in 1953.

He became a Professorial Fellow of Hertford College in 1963 and was active as Dean of Degrees at the college until the week before he died. He retired from his Chair in 1974.

Powell is survived by his wife, the former Primrose Dunn.