

Judith Howard
Chancellor's Medal
30 April 2018

Professor Judith Howard FRS is a leading international figure in the field of Structural Chemistry. During her career she has pioneered new methodology in the field of X-ray crystallography; showing how the three-dimensional structure of a material can be determined down to atomic level by firing a high-intensity beam of X-rays at a crystal and interpreting the complex scattering patterns that emerge.

Judith's group has developed techniques that can do this at extremely low temperatures, as low as just a couple of degrees above absolute zero (that's -271°C – colder than the depth of outer space). At these temperatures thermal vibration can be greatly reduced, allowing the positions of atoms to be pinpointed to less than a trillionth of a meter. The wonderful 3d pictures, showing the structures of molecules that emerge from this, help Chemists to understand how molecules work.

Judith was born in Cleethorpes in Lincolnshire, to parents who were passionate believers in education. She studied Chemistry at Bristol University in 1963, moving to the University of Oxford in 1966 to do her DPhil working with the Nobel prize winner, Dorothy Hodgkin, on diffraction studies. During her DPhil, she developed new techniques for carrying out low temperature diffraction experiments with neutrons, working also, at the time, with the Atomic Energy Research Establishment at Harwell.

She moved back to Bristol in 1969, where she started building her own novel instrumentation; and then moved to Durham University in 1991, taking up a foundation Chair in Structural Chemistry. In Durham, Judith established one of the world's leading laboratories for low and variable temperature structural chemistry. Her pioneering work over the last 27 years, has resulted in extraordinary outputs. (She now has over 1,500 publications to her name.)

Over the years the quality of Judith's work has been recognised in numerous awards; including Honorary Doctorates from the Open University, Bath University, Bristol University and UEA and she has been the winner of the Royal Society of Chemistry's Prize for Structural Chemistry. She was made a CBE for her 'contributions to science' in 1996, and, in 2002, she was elected as a Fellow of the Royal Society.

Down the years, Judith's contribution to Durham and her research field has been immense. She was the first woman to head a 5-star Chemistry Department, and she was the first Director of the Biophysical Sciences Institute in Durham. She was Founder, and later first lady president of the British Crystallographic Association and co-founded its successful biennial teaching school in 1987, which still runs in Durham. She was the first female Chair of the Royal Society's Chemistry Fellowship selection panel. She is currently on four Royal Society Committees, in addition to the Science Advisory Board for the European Science Foundation.

On a more personal note, it is Judith's role as a mentor and inspirer, for so many students and young staff members, that will never be forgotten. Like so many of my peers, Judith was one of the first people I met when I came for interview in Durham; and as a young lecturer, I looked to Judith to learn the ropes and to gain insight into the secrets of how to build a successful research career. The friendly atmosphere and the welcoming and encouraging of young people with new ideas is, maybe, the best part of the "*Durham Difference*", and Judith's contribution to this over the years is also something that Durham can be extremely proud of.

Chancellor, I present Judith Howard to receive the Chancellor's Medal.