

Elsbeth Garman
Doctor of Science
Durham Cathedral, 3 July 2019

Chancellor, University colleagues, Students, Parents, and Guests.

It is a great honour and a pleasure to welcome, and present to you, Professor Elspeth Garman, one of the most distinguished scientists in the United Kingdom. Professor Garman started her career in nuclear physics and then moved towards the field of her greatest scientific achievements, Macromolecular Crystallography. This technique, which was invented at the beginning of the last century by the Father and Son team William Henry Bragg and William Lawrence Bragg, uses high intensity X-rays to illuminate a tiny crystal of a biological macromolecule to calculate and determine the exact molecular structure in exquisite detail. Who has not marvelled at the beauty and complexity of the structure of DNA determined by Francis Crick and James Watson based on X-ray images collected by Rosalind Franklin in 1953? In all the complexity of its structure also lies the simplicity of the genetic code that underpins all life on this planet. From the first protein structures of Myoglobin determined in 1958 by John Kendrew, that showed how Oxygen is transported in our blood, the precise molecular knowledge of the protein machines that determine every aspect of life has revolutionized our view of modern biology. Macromolecular crystallography has become an indispensable aspect in academia and pharmaceutical industries ranging from basic science to the development of new drugs.

This, Ladies and Gentleman, is made a profound impact. In the nineties so-called synchrotrons, large particle accelerator, not dissimilar to the big accelerator in Geneva, CERN, but designed to produce ultra-high intensity X-rays, many orders of magnitudes stronger than laboratory sources, slowly become a tool for macromolecular crystallography. Professor Garman was among the first to realize that crystals made of biological samples suffer severe radiation damage, just like we would if we were careless enough to da

exploited sophisticated methods to mitigate radiation damage

Elsbeth always had a passion for public engagement encouraging pupils and students of all backgrounds to follow their dreams. She has been involved in many television and radio programs;

. Her outstanding contributions have been widely recognised. There are too many prizes to name them all, so I only want to note the Humanitarian Award from the Women International in Film and Television Showcase in 2015, the Rose Lecture and Medal at Kingston University in 2014, the Mildred Dresselhaus Senior Award in 2015, the Fankuchen Award by the American Crystallographic Association in 2016, the inaugural Sosei Heptares Prize awarded by the British Biophysical Society in 2018, and most recently (51M36d).32 -.32,-and 0 0 1 465.7 593.35 .024 50.0.32 841F1 12 T Cryse 2 841.92 re2