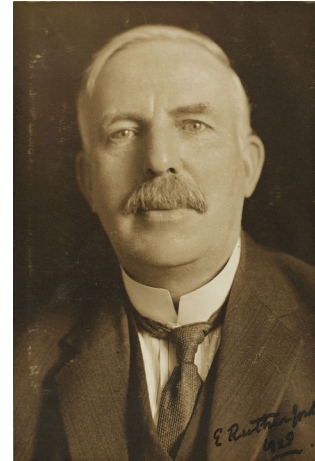




Curriculum Vitae Professor Dr Ernest Rutherford

Name: Ernest Rutherford

Life Dates: 30 August 1871 - 19 October 1937



Ernest Rutherford was a New Zealand experimental physicist. He is considered a co-founder of atomic physics, made contributions to the ionisation of gases, and investigated radioactive elements. He also introduced the terms alpha and beta radiation. For his investigations on the disintegration of radioactive elements and the chemistry of radioactive substances, he was awarded the Nobel Prize in Chemistry in 1908.

Academic and Professional Career

Starting in 1889, Ernest Rutherford studied at Canterbury College (now the University of Canterbury) in Christchurch, New Zealand, which was part of the University of New Zealand in Wellington. In 1893 he received a BA in mathematics and physical sciences and one year later an MA in chemistry and geology. He subsequently transferred on a scholarship to Trinity College at the University of Cambridge in Great Britain for one year, from which he graduated with a BSc in 1897.

Shortly before, his first publication dealing with the magnetising effect of high-frequency oscillations had appeared in New Zealand. In a second publication, Rutherford described the development of an apparatus for measuring short time intervals. This work led to the invention of the first radio wave receiver, which Rutherford perfected after he arrived in Cambridge. He first attracted international attention in 1896 with the development of an electrometer for measuring X-rays. In the same year, Henry Becquerel discovered natural radioactivity and thus provided Rutherford with a completely new field of research.

From 1898 to 1907, he taught physics at McGill University in Montreal, Canada. During this time, Otto Hahn also worked as a visiting scientist in Rutherford's laboratory for six months. It was there

that Rutherford discovered the law of radioactive decay and the associated half-life. In 1903, he succeeded in proving that the alpha rays, which he named, have a positive charge. In 1906, he published his concept of the atom, which was similar to a planetary system where negatively charged electrons orbit around a positively charged nucleus. This assumption overturned the previous model of the British physicist and 1906 Nobel Prize winner in Physics Joseph John Thomson. It was named the Rutherford model in 1911, but in later years, was again replaced by Niels Bohr's atomic model.

In 1907, he became Langworthy Professor of Physics at the University of Manchester. There he worked with, among others, the later Nobel Prize laureates Niels Bohr (Nobel Prize in Physics 1922) and Patrick Blackett (Nobel Prize in Physics 1948).

He accepted the position of Cavendish Professor of Physics at Cambridge University in 1919. He also took over the management of the Cavendish Laboratory in Cambridge. There he devoted himself to experimental nuclear physics. By bombarding nitrogen with alpha rays, Rutherford succeeded in creating an artificial nuclear reaction. This paved the way for modern atomic physics and the later development of the atomic bomb. Rutherford worked in Cambridge until his sudden death in 1937.

Nobel Prize in Chemistry 1908

During his time at McGill University in Montreal, Ernest Rutherford presented several groundbreaking works. In 1902, together with the British chemist Frederick Soddy, he substantiated the theory of radioactive element disintegration and the associated half-life. It states that radioactive chemical elements can be transformed, and radioactive atoms' probable rate of disintegration can be measured in time. Here, the time needed for half of the radioactive substance to decay is the so-called half-life. The radioactive decay law disproved the doctrine that radioactive chemical elements were indestructible.

In 1903, he succeeded in proving that the alpha rays, which he named, have a positive charge. In 1906, he published his concept of the atom, which led to Rutherford's atomic model in 1911. He was awarded the Nobel Prize in Chemistry for this research in 1908.

Honours and Awarded Memberships

Ernest Rutherford received numerous additional honours, including the Rumford Medal of the Royal Society (1905), the Barnard Medal of Columbia University and the Bressa Prize of the Accademia delle Scienze di Torino (both 1910), the Matteucci Medal (1913), the Copley Medal of the Royal Society (1922), the Franklin Medal of the Franklin Institute Philadelphia and the Order of Merit (both 1925), the Albert Medal of the Royal Society of Arts (1928), and the Faraday Medal of the Institution of Electrical Engineers (1930). He was also knighted (Knights Bachelor) by the British Crown in 1914. In 1931 he was raised to the peerage of Baron Rutherford of Nelson, New Zealand, and Cambridge.

He was a member of numerous academies and scientific bodies, including the Royal Society of New Zealand (1892), the Royal Society of Canada (1900), the American Philosophical Society (1904), the

Royal Society (1903), of which he was president from 1925 to 1930, the British Association for the Advancement of Science, of which he was president in 1925, the Institute of Physics, of which he was president from 1931 to 1933, the Pontifical Academy of Sciences, as well as the Royal Society of Edinburgh (1921) and the German Academy of Natural Sciences Leopoldina (1932).

Personal Details

Ernstes Rutherford was born on 30 August 1871 in Brightwater, New Zealand, to wheelwright James Rutherford and his wife, teacher Martha Thompson Rutherford, as the fourth of twelve children. His father had immigrated from Scotland, and his mother had worked as a teacher in England. For economic reasons, the family had to move frequently within New Zealand. Starting in 1877, Rutherford attended primary school in Foxhill in the Tasman District. From 1887 to 1889, he went to Nelson College in Nelson on a scholarship. He lived in a boarding house during this time run by the widowed suffragette Mary Newton. On 28 June 1900, he married her daughter, Mary Georgina Newton. The couple had one daughter, Eileen, in 1901.

He later advocated for gender-neutral applications to Cambridge. From 1933 on, he helped the British economist William Henry Beveridge to found the Academic Assistance Council (AAC), of which Rutherford was president in the final year of his life. Among other things, this association helped Jewish academics escape Nazi Germany.

Ernest Rutherford passed away in 1937 and was buried in Westminster Abbey, close to Isaac Newton.

The element with the atomic number 104 has been named rutherfordium (Rf) since 1997 in honour of Rutherford; in addition, a mineral discovered in 1906 bears the name Rutherfordin. A memorial in his honour is located in his birthplace Brightwater and several research institutions also carry his name. In addition, his portrait graces the 100 New Zealand dollar banknotes. The Physical Society of London has been awarding the Rutherford Medal and Prize since 1965.