

Women who made history

By Julie Ulrich for Inclusion & Diversity and Women in Leadership

Globally, March is celebrated as Women's History Month. The monthlong event is a chance to recognize and celebrate the contributions women have made to history, culture and society.

As part of INL's celebration of Women's History Month, we are highlighting four female nuclear scientists who made history. Later this month, we'll have a story featuring three INL women who will make history.

Do you know of other women in science who made history? Share a story in the comments section at the end of the article.

Marie Curie • Physicist (1867 – 1934)



Marie Curie

Marie Curie was a Polish-born French physicist famous for her work on radioactivity. Marie Curie became the first woman to win a Nobel Prize and the only woman to win the award in two different fields (physics and chemistry). Curie's efforts, with her husband Pierre Curie, led to the discovery of polonium and radium and, after Pierre's death, the further development of X-rays. All of the years she spent working with radioactive materials took a toll on her health. She was known to carry test tubes of radium around in the pocket of her lab coat.

Irene Joliot-Curie • Scientist (1897 – 1956)

Born in Paris, France, Irene Joliot-Curie was the daughter of Pierre and Marie Curie. Irene Curie followed in her mother's footsteps, winning the Nobel Prize in chemistry in partnership with her husband Frederic. At age 21, she became her mother's

laboratory assistant at the Radium Institute, which her mother founded. Irene discovered how to synthesize "designer" radioactive elements in the laboratory. Such elements are now used in tens of millions of medical procedures every year. Their use has saved millions of lives.



Irene Joliot-Curie

Lise Meitner • Physicist (1878 – 1968)



Lise Meitner

Lise Meitner was an Austrian-born physicist who worked on radioactivity and nuclear physics. Otto Hahn and Meitner led the small group of scientists who first discovered nuclear fission of uranium when it absorbed an extra neutron. Meitner and her nephew, Otto Frisch, understood that the fission process, which splits the atomic nucleus of uranium into two smaller nuclei, must be accompanied by an enormous release of energy. This process is the basis of the nuclear weapons that were developed in the U.S. during World War II and used against Japan in 1945. Nuclear fission is also the process used by nuclear reactors to generate electricity. Meitner did not share in the 1944 Nobel Prize in chemistry for nuclear fission that was awarded exclusively to her longtime collaborator Otto Hahn. Meitner received a flurry of posthumous honors, including the naming of chemical element 109 as meitnerium in 1997.

Chien-Shiung Wu • Physicist (1912 – 1997)

Chien-Shiung Wu was born in Liu ho, China. Wu joined the Manhattan Project early in World War II. Here she helped develop

the process to enrich uranium ore to produce the fuel for the atomic bomb. In 1944, she accepted a position at Columbia University. Her research at the university helped to disprove the law of conservation of parity. This law had been assumed to be a fundamental law of nature. It stated that beta particles emitted by a radioactive nucleus would fly off in any given direction, regardless of the spin of nucleus. In 1957, utilizing atoms of cobalt-60, Wu showed that beta particles were most likely to be emitted in a particular direction. This direction depended on the spin of the cobalt nuclei. This confirmed a 1956 theory by other scientists who received the 1957 Nobel Prize in physics. Wu also conducted research on molecular changes in the deformation of hemoglobin that lead to sickle-cell anemia.



Chien-Shiung Wu

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