ISSN 2278–5469 EISSN 2278–5450

Discovery

First sustained atomic chain reaction achieved in 1942, December 2

Brindha V☼

☼**Correspondence to:** E-mail: brindbiotech@gmail.com

Publication History
Received: 09 October 2013
Accepted: 16 November 2013
Published: 1 December 2013

Citation
Brindha V. First sustained atomic chain reaction achieved in 1942, December 2. *Discovery*, 2013, 8(19), 6

General Note
Article is recommended to print as color digital version in recycled paper.

The first man-made sustained nuclear chain reaction was created on December 2 in 1942. 15 years later, the first full-scale nuclear power plant went online. Enrico Fermi, Leo Szilard and their colleagues achieve a successful, controlled chain reaction in a squash court underneath the football grandstand of the University of Chicago's Stagg Field. It lays the groundwork for the first atomic bombs. The achievement of the first sustained nuclear reaction was the beginning of a new age in nuclear physics and the study of the atom. Human kind could now use the tremendous potential energy contained in the nucleus of the atom. However, while a controlled chain reaction was achieved with natural uranium, and could produce plutonium, it would be necessary to separate U-235 from U-238 to build a uranium bomb.

Enrico Fermi was born in Rome, Italy, on September 29, 1901. The son of a railroad official, he studied at the University of Pisa from 1918 to 1922 and later at the universities of Leyden and Gottingen. He became professor of theoretical physics at the University of Rome in 1927. Fermi's accomplishments were in both theoretical and experimental physics, a unique feat in an age in which scientific endeavours have tended to specialize on one aspect or the other. Fermi received the Nobel Prize in 1938 for "his discovery of new radioactive elements produced by neutron irradiation, and for the discovery of nuclear reactions brought about by slow neutrons." Fermi and his family used the opportunity offered by his trip to Sweden for the awards ceremonies to come to the United States where Fermi accepted a position as professor of physics at Columbia University.

In the squash courts under the west stand of the University's Stagg Field, Fermi supervised the design and assembly of an "atomic pile", a code word for an assembly that in peacetime would be known as a "nuclear reactor". On December 2, 1942, man achieved here the first self-sustaining chain reaction and thereby initiated the controlled release of nuclear energy." At the end of World War II, the University of Chicago formed its Institute for Nuclear Studies (now named The Enrico Fermi Institute), to keep together the gifted scientists who had worked on the development of the atom bomb. These dedicated scientists to a man rejoiced in the opportunity at the University of Chicago to pursue their research for its intrinsic value, for "peaceful uses" that might follow.

Fermi is recognized among physicists as one of the great scientists of the 20th century. Every college physics student sees his name in textbooks as a major contributor to important ideas, not just in nuclear physics, but in many aspects of physical science. He worked always at the forefront of knowledge, and loved the excitement of being involved in breakthroughs in physics. He died on November 28, 1954. A number of science institutions and awards have been named in his honor.