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Readings & Abstracts

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Centenary year of the Discovery of Radio-Activity in Thorium, Polonium and Radium

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The year 1898 was very exciting among the most eventful breakthrough years in the history of science. An Italian, E. Villari, had used pitchblende to measure the activity of uranium. Had Villari had a measuring instrument for comparing the activity of substances, he might have discovered that pitchblende was more active than uranium. In Germany, Gerhard Carl Schmidt had reported the activity of thorium to the Deutsche Physikalische Gesellschaft on March 24, 1898. But Schmidt didn't try to measure the great variety of elements and minerals that Marie Curie did, and therefore did not happen upon chalcite and pitchblende. Marie Curie and Pierre Curie, in France, were not aware of these contemporary works.

On February 17, 1898, Marie Curie tested a sample of the heavy, black pitchy mineral compound known as pitchblende. On February 24, 1898, she found that the mineral aeschynite, which contains thorium but no uranium, was more active than uranium. On April 9, 1898, Marie Curie made repeated measurements of pure uranium and of pitchblende from three different sources. On April 12, 1898, Gabriel Lippmann, Marie's teacher, delivered a report written by Marie Sklodowska Curie on "Rays emitted by uranium and thorium compounds" to French Academy of Sciences.

She introduced a "novelty into physics: radioactive properties are a diagnostic for the discovery of new substances". Even more important is Marie Curie's intimation what activity she is measuring is an atomic property, proportional to the amount of uranium of thorium being measured.

On July 13, 1898, Pierre wrote in the lab notebook "Po" - an abbreviation for the name and he and Marie had chosen, in honour of her country of origin "Polonium" for Poland. Five days later, Henri Becquerel at the Institut de France presented the epoch making paper titled "On a new radioactive substance contained in pitchblende" by Marie Curie and Pierre Curie. This was the first time and only once the word "radio-active" was used in the title. The new element polonium was 400 times as active as uranium.

In July of 1898 the French Academy of Sciences bestowed Marie the 3,800 franc Prix Gegner award, citing her "lengthy work" on magnetic properties of steel, as well as her work on radioactivity.

On December 26, 1898 the paper "on a new strongly radio-active substance contained in pitchblende" by the Curie's and Gustave Be'mont, marked a turning point in the Curie's research partnership.

Heroic efforts of Marie Sklodowska Curie and Pierre Curie at the time when they were discovering new elements were recalled. Nuclear Science originated from their pioneering work. Indeed, Marie Curie was the Copernicus of the world of the small. Till date she is the only woman who has received two Nobel prizes.