THE PHYSICS CHRONICLES "Research on Radioactive Substances"

Marie Curie, 1898

Marie Curie was a Polish physicist whose findings on radioactivity had an enormous impact on both science and medicine. Curie also became the first woman to win a Nobel Prize and remains the only person to have won Nobel Prizes in two scientific fields, chemistry and physics, setting a historic precedent for women in science.

Key Concepts of "Research on Radioactive Substances"

Radioactivity

Curie's research revealed that certain elements emit energy and particles as they decay. She discovered that this process was not a result of chemical reactions but rather a fundamental property of the atom itself, altering the understanding of atomic stability.



Radioactive Measurement

Curie pioneered the methods for accurately measuring and quantifying radioactivity, laying the groundwork for precise scientific study in the field. She developed a device called the electrometer to measure the electric charge generated by radioactive emissions, allowing scientists to identify radioactive elements by their





New Elements

By analyzing the mineral pitchblende, Curie identified radiation levels much stronger than those from uranium alone. This led to the isolation of two new elements, polonium and radium, which emitted powerful radioactive rays. Radium, in particular, was found to be millions of times more radioactive than uranium.



energy output.

Scientific Context Before Curie's Paper

Before Marie Curie's discovery of radioactivity, the understanding of atomic structure was limited, and many believed atoms were the smallest, indivisible units of matter. Atoms were seen as stable, unchanging building blocks, following Dalton's atomic theory, which didn't account for the release of energy from within an atom.





Impact of "Research on Radioactive Substances"

Curie's discoveries fundamentally changed the understanding of atomic structure and paved the way for nuclear physics and quantum mechanics. Her work proved that atoms were not indivisible and stable, but rather dynamic and capable of transformation, providing the first evidence that atoms could emit particles and energy. This opened new fields of research, including nuclear chemistry and particle physics.

Want to Learn More?

Books:

"Madame Curie: A Biography" by Eve Curie

"The Discovery of Radioactivity and Transmutation" by Mario Bertolotti