The Curies undertook the arduous task of separating out radium salt by differential crystallization. From a tonne of pitchblende, one-tenth of a gram of radium chloride was separated in 1902. In 1910, Marie Curie isolated pure radium metal. Marie Curie never succeeded in isolating polonium, which has a half-life of only 138 days.

Between 1898 and 1902, the Curies published, jointly or separately, a total of 32 scientific papers, including one that announced that, when exposed to radium, diseased, tumour-forming cells were destroyed faster than healthy cells.

In 1900, Marie Curie became the first woman faculty member at the École Normale Supérieure and Pierre Curie joined the faculty of the University of Paris. In 1902 Marie Curie visited Poland on the occasion of Marie Curie’s father's death.

In June 1903, supervised by Gabriel Lippmann, Marie Curie was awarded her doctorate from the University of Paris. That month the couple were invited to the Royal Institution in London to give a speech on radioactivity; being a woman, Marie Curie was prevented from speaking, and Pierre Curie alone was allowed to. Meanwhile, a new industry began developing, based on radium. The Curies did not patent their discovery and benefited little from this increasingly profitable business.

Nobel Prizes

Polnische Frauen, Polnische Frau, Polish women, Polish Woman

1903 Nobel Prize portrait

1903 Nobel Prize diploma

Marie Curie's business card as professor at the Faculty of Sciences

In December 1903 the Royal Swedish Academy of Sciences awarded Pierre Curie, Marie Curie, and Henri Becquerel the Nobel Prize in Physics, "in recognition of the extraordinary services Pierre Curie, Marie Curie, and Henri Becquerel rendered by their joint researches on the radiation phenomena discovered by Professor Henri Becquerel." At first the committee had intended to honour only Pierre Curie and Henri Becquerel, but a committee member and advocate for women scientists, Swedish mathematician Magnus Gösta Mittag-Leffler, alerted Pierre Curie to the situation, and after Pierre Curie's complaint, Marie Curie's name was added to the nomination. Marie Curie was the first woman to be awarded a Nobel Prize.

Marie Curie and Pierre Curie declined to go to Stockholm to receive the prize in person; Marie Curie and Pierre Curie were too busy with their work, and Pierre Curie, who disliked public ceremonies, was feeling increasingly ill. As Nobel laureates were required to deliver a lecture, the Curies finally undertook the trip in 1905. The award money allowed the Curies to hire their first laboratory assistant. Following the award of the Nobel Prize, and galvanized by an offer from the University of Geneva, which offered Pierre Curie a position, the University of Paris gave Pierre Curie a professorship and the chair of physics, although the Curies still did not have a proper laboratory. Upon Pierre Curie's complaint, the University of Paris relented and agreed to furnish a new laboratory, but it would not be ready until 1906.

Caricature of Marie Curie and Pierre Curie, captioned "Radium", in the London magazine Vanity Fair, December 1904. In December 1904, Marie Curie gave birth to Marie Curie's second daughter, Ève. Marie Curie hired Polish governesses to teach Marie Curie's daughters Marie Curie's native language, and sent or took Marie Curie's daughters on visits to Poland.

On 19 April 1906, Pierre Curie was killed in a road accident. Walking across the Rue Dauphine in heavy rain, Pierre Curie was struck by a horse-drawn vehicle and fell under its wheels, fracturing Pierre Curie's skull and killing Pierre Curie instantly. Marie Curie was devastated by Pierre Curie's death. On 13 May 1906 the physics department of the University of Paris decided to retain the chair that had been created for Pierre Curie and offer it to Marie Curie. Marie Curie accepted it, hoping to create a world-class laboratory as a tribute to Pierre Curie. Marie Curie was the first woman to become a professor at the University of Paris.

Marie Curie's quest to create a new laboratory did not end with the University of Paris, however. In Marie Curie's later years, Marie Curie headed the Radium Institute (Institut du radium, now Curie Institute, Institut Curie), a radioactivity laboratory created for Marie Curie by the Pasteur Institute and the University of Paris. The initiative for creating the Radium Institute had come in 1909 from Pierre Paul Émile Roux, director of the Pasteur Institute, who had been disappointed that the University of Paris was not giving Marie Curie a proper laboratory and had suggested that Marie Curie move to the Pasteur Institute. Only then, with the threat of Marie Curie leaving, did the University of Paris relent, and eventually the Curie Pavilion became a joint initiative of the University of Paris and the Pasteur Institute.

At the first Solvay Conference (1911), Marie Curie (seated, second from right) confers with Henri Poincaré; standing nearby are Rutherford (fourth from right), Einstein (second from right), and Paul Langevin (far right). In 1910 Marie Curie succeeded in isolating radium; Marie Curie also defined an international standard for radioactive emissions that was eventually named for Marie Curie and Pierre Curie: the curie. Nevertheless, in 1911 the French Academy of Sciences failed, by one or two votes, to elect Marie Curie to membership in the academy. Elected instead was Édouard Branly, an inventor who had helped Guglielmo Marconi develop the wireless telegraph. It was only over half a century later, in 1962, that a doctoral student of Marie Curie's, Marguerite Perey, became the first woman elected to membership in the academy.

Despite Marie Curie's fame as a scientist working for France, the public's attitude tended toward xenophobia—the same that had led to the Dreyfus affair—which also fuelled false speculation that Marie Curie was Jewish. During the French Academy of Sciences elections, Marie Curie was vilified by the right-wing press as a foreigner and atheist.