

**The studies of Joseph Priestley (1733-1804) on the theory of electricity****Elisa Cristina Oliosi****PhD Dissertation****Pontifical Catholic University of São Paulo, Brazil**

During the 18th century, the studies on the composition of matter included the notion of imponderable fluids. These were called so because they were invisible, imperceptible and had no weight. They could, however, be perceived through their effects, which the natural philosophers sought to observe and define through observation of nature and experiments in the laboratory. This was how air, fire, heat, light, gravity and electricity, among others were approached.

Regarding electricity, there were divergent theories about its composition. One main line, represented by Benjamin Franklin, maintained that there was one single electric fluid, which was subtle and elastic and diffused among bodies so that their particles suffered attraction and repulsion.

On the other hand, Joseph Priestley was among those who held that there were, in fact, two different electric fluids, one associated with attraction and the other with repulsion. In his view, different bodies contained also different “amounts” of electricity and attraction, e.g. occurred when a body containing more electricity came close to another with less. This encounter, however, was violent, resulting at the same time in repulsion between them.

This was the theoretical framework for Priestley’s countless experiments to verify the presence of electricity in different materials. Through friction, he established the intensity of the production of electric sparks, which allowed him to classify the tested materials in conductors and non conductors of electricity.

These experiments were described in several works, especially in *The History and Present State of Electricity with Original Experiments* and *Familiar Introduction to the Study of Electricity*, first published in 1767 and 1768, respectively. Analysis of these works allowed understanding the path followed by Priestley to develop his theory of electricity.

**Keywords**History of science; Electricity; 18<sup>th</sup> century; Imponderables; Joseph Priestley