An **ion** is an atom or molecule with a net electrical charge. The charge of an electron is considered to be negative by convention and this charge is equal and opposite to the charge of a proton, which is considered to be positive by convention. The net charge of an ion is not zero because its total number of electrons is unequal to its total number of protons.

A **cation** is a positively charged ion with fewer electrons than protons (e.g. K^+ (potassium ion)) while an **anion** is a negatively charged ion with more electrons than protons (e.g. Cl^- (chloride ion) and OH^- (hydroxide ion)). Opposite electric charges are pulled towards one another by electrostatic force, so cations and anions attract each other and readily form ionic compounds. Ions consisting of only a single atom are termed *monatomic ions*, *atomic ions* or *simple ions*, while ions consisting of two or more atoms are termed polyatomic ions or *molecular ions*.

This term was introduced (after a suggestion by the English polymath William Whewell) by English physicist and chemist Michael Faraday in 1834 for the then-unknown species that *goes* from one electrode to the other through an aqueous medium. Faraday did not know the nature of these species, but he knew that since metals dissolved into and entered a solution at one electrode and new metal came forth from a solution at the other electrode; that some kind of substance has moved through the solution in a current. This conveys matter from one place to the other. In correspondence with Faraday, Whewell also coined the words *anode* and *cathode*, as well as *anion* and *cation* as ions that are attracted to the respective electrodes.

Svante Arrhenius put forth, in his 1884 dissertation, the explanation of the fact that solid crystalline salts dissociate into paired charged particles when dissolved, for which he would win the 1903 Nobel Prize in Chemistry. Arrhenius' explanation was that in forming a solution, the salt dissociates into Faraday's ions, he proposed that ions formed even in the absence of an electric current.

In 1897, the British physicist J. J. Thomson, with his colleagues John S. Townsend and H. A. Wilson, performed experiments indicating that cathode rays really were unique particles, rather than waves, atoms or molecules as was believed earlier. By 1899 he showed that their charge-to-mass ratio, e/m, was independent of cathode material. He further showed that the negatively charged particles produced by radioactive materials, by heated materials and by illuminated materials were universal. Thomson measured m/e for cathode ray "corpuscles", and made good estimates of the charge e, leading to value for the mass m, finding a value 1400 times less massive than the least massive ion known: hydrogen.

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