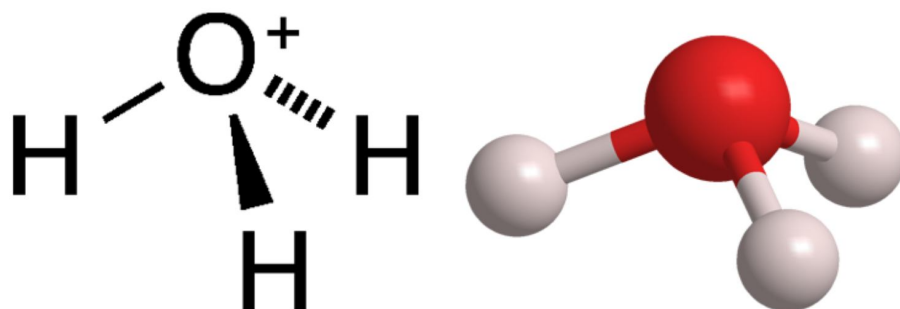


Hydronium ion



All acidic aqueous solutions contain protonated water, known commonly as the hydronium ion (H_3O^+). Brønsted acids release one or more of their protons (hydrogen ions), which combine with water molecules. Lewis acids extract one or more hydroxyl ions from water to release hydrogen ions, which, again, form hydronium ions. So, when you see an aqueous chemical equation with the symbol H^+ , be assured that the actual ionic species is H_3O^+ .

Why is “oxonium” the preferred name for the hydronium ion? It’s because hydronium is the simplest form of oxonium ions, in which three entities are attached to an oxygen atom, resulting in a net positive charge. [*In my opinion, hydronium is much more descriptive than oxonium.*—Ed.]

The concept of the hydronium ion has been known since the 19th century. In the 1880s, Swedish physicist/chemist Svante Arrhenius, working with German chemist Wilhelm Ostwald, defined an acid as a substance that dissociates in water to form hydrogen ions, which protonate water to form hydronium ions. Protonating acids became known as Arrhenius acids.

Arrhenius worked at Sweden’s Royal Institute of Technology (Stockholm) for his entire career. Later in his career, he helped establish the Nobel Prizes. He won the award in chemistry in 1903 for his definitions of acids and bases.

Not to be outdone, Ostwald won the 1909 Nobel Prize in Chemistry for his work in chemical reaction rates, equilibria, and catalysis. He worked at Riga Polytechnical Institute (Latvia) when he collaborated with Arrhenius.

Arrhenius’s ideas were later refined, independently, by Johannes Brønsted at the University of Copenhagen and Martin Lowry at the University of Cambridge (UK). Protonating acids are now known as Brønsted acids.

Quelle: <https://www.acs.org/content/acs/en/molecule-of-the-week/archive/h/hydronium-ion.html>