

ACIDS, BASES, PH AND BUFFERS

Recall that the bonds that bind the oxygen and hydrogen together in water are polar covalent bonds and that covalent compounds typically do not dissociate. However, the polarity of water allows it to form hydrogen bonds with other water molecules in which the negative (oxygen) end of one water molecule is attracted to the positive (hydrogen) end of another water molecule. Although this is a weak attraction, occasionally, the oxygen of one water molecule is able to steal the hydrogen from another water molecule, splitting the water molecules into ions. When this happens, it results in the formation of a **hydrogen ion (H^+)** and a **hydroxide ion (OH^-)**. Realize that in pure water, very few water molecules split—about 1 out of every 554,000,000 (who counted?). We can write the equation for this process like this:



Note that as with all chemical reactions, the reactants and products are in equilibrium, and if that equilibrium is disturbed, the reaction will proceed until a new equilibrium is reached, hence the two-headed arrow in the equation (\rightleftharpoons).

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