

Autoionization of H₂O



$$K_w = [\text{H}^+] [\text{OH}^-] = 1.0 \times 10^{-14} \quad \text{at } 25^\circ\text{C}$$

$$[\text{H}^+] = [\text{OH}^-] = 1.0 \times 10^{-7}$$

$$K_w = [0.1] [\text{OH}^-] = 1.0 \times 10^{-14}$$

$$[\text{OH}^-] = 1.0 \times 10^{-13}$$

Le Chatelier add **H⁺** [**OH⁻**] decrease

$$\frac{0.10 \text{ mol HCl}}{1.0 \text{ L}} = \frac{0.1 \text{ mol H}^+}{\text{L}} \quad [\text{H}^+] = 0.10 \text{ M}$$

both present in all aqueous solutions