# Reaction Mechanism

$$H_2(g) + I_2(g) \rightarrow 2HI(g)$$

$$\text{rate} = k\,[H_2]\,[I_2]$$

*step 1* $I_2 \rightleftharpoons 2I\cdot$

forward rate $= k_f\,[I_2]$

reverse rate $= k_r\,[I\cdot]^2$

equilibrium $k_f[I_2] = k_r[I\cdot]^2$

$$K_{eq} = \frac{[I\cdot]^2}{[I_2]} = \frac{k_f}{k_r}$$