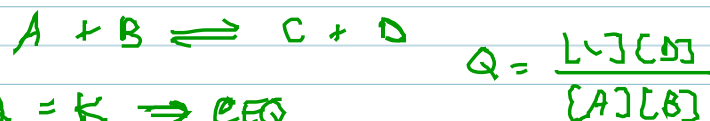


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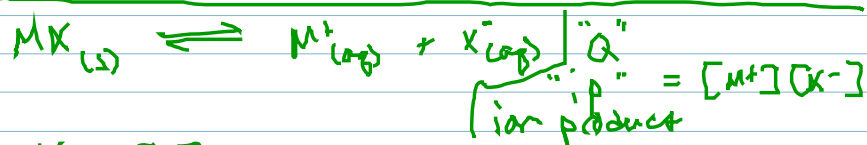
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$$Q = K \Rightarrow \text{@EQ}$$

$Q < K \Rightarrow$ forward reaction faster
formation of products is favorable

$Q > K \Rightarrow$ reverse reaction faster
formation of reactants is favorable



$ip = K_{sp}$ @EQ
Saturated solution NO PPT FORMS

$ip < K_{sp} \rightarrow$ favors the forward reaction
(DISSOLVING)
NO PPT FORMS

$ip > K_{sp} \Rightarrow$ reverse reaction is favored
PPT FORMS

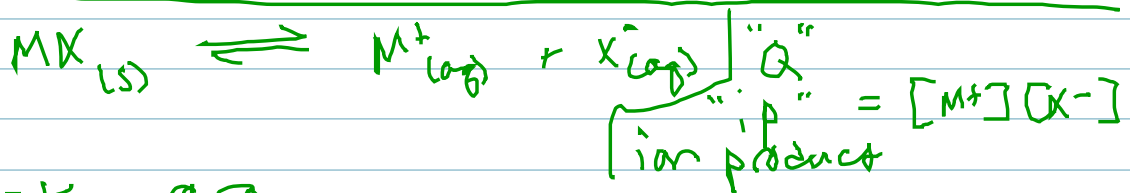


$$Q = \frac{[C][D]}{[A][B]}$$

$$Q = K \Rightarrow @EQ$$

$Q < K \Rightarrow$ forward reaction faster
formation of products is favorable

$Q > K \Rightarrow$ reverse reaction faster
formation of reactants is favorable

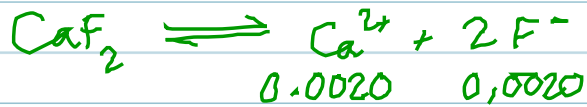
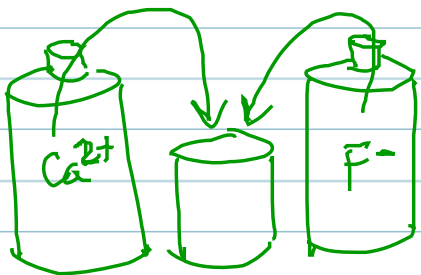


$ip = K_{sp} @EQ$
Saturated solution NO PPT FORMS

$ip < K_{sp} \Rightarrow$ favors the forward reaction
(DISSOLVING)
NO PPT FORMS

$ip > K_{sp} \Rightarrow$ reverse reaction is favored
PPT FORMS

The K_{sp} of CaF_2 is 4.0×10^{-11} . Would CaF_2 precipitate out of a mixture where $[\text{Ca}^{2+}] = 0.0020 \text{ M}$ and $[\text{F}^-] = 0.0020 \text{ M}$?



$$iP = [\text{Ca}^{2+}][\text{F}^-]^2$$

$$= (0.0020)(0.0020)^2$$

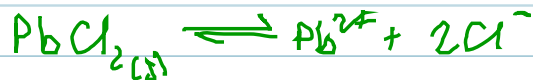
$$iP = 8.0 \times 10^{-9}$$

$iP > K_{sp} \rightarrow$ yes! ppt will form

$\text{PbCl}_2 \quad K_{sp} = 2.4 \times 10^{-4}$

$$[\text{Pb}^{2+}] = 0.0030 \text{ M}$$

$$[\text{Cl}^-] = 0.0040 \text{ M}$$



$$iP = [\text{Pb}^{2+}][\text{Cl}^-]^2$$

$$= (0.0030)(0.0040)^2$$

$iP < K_{sp} \Rightarrow$ NO
ppt
FORMS

$$iP = 4.8 \times 10^{-8}$$