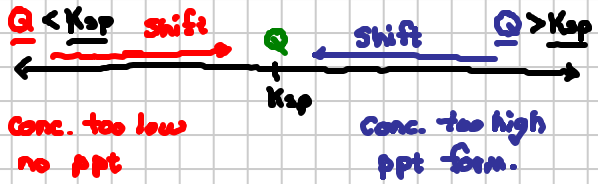
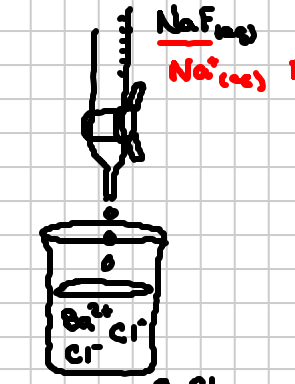
Lecture 16.4: Precipitation Thresholds

Note Title

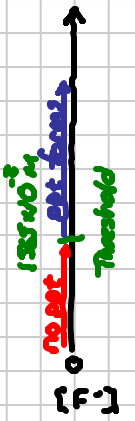
✓ Reaction Quotient:



$Q = K_{sp}$. PPT Threshold:
min. conc for ppt formation.



- 0.100M $BaCl_2$
- $[Ba^{2+}]$: 0.100M
- $[Cl^-]$: 0.200M



PPT: $BaF_{2(s)} \rightleftharpoons Ba^+_{(aq)} + 2F^-_{(aq)}$ $K_{sp} = 2.45 \times 10^{-5}$

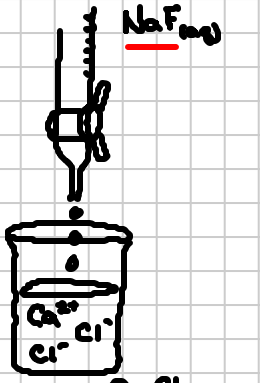
Calc. ppt. threshold. Det $[F^-]$ such that a ppt forms.

Threshold. $Q = K_{sp}$

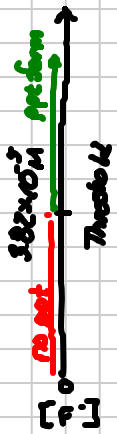
$$[Ba^{+2}][F^-]^2 = 2.45 \times 10^{-5}$$

$$(0.100M)[F^-]^2 = 2.45 \times 10^{-5}$$

$$[F^-] = 1.565 \times 10^{-2} M$$



- 0.100M $CaCl_2$
- $[Ca^{2+}]$: 0.100M
- $[Cl^-]$: 0.200M



PPT: $CaF_{2(s)} \rightleftharpoons Ca^{+2}_{(aq)} + 2F^-_{(aq)}$ $K_{sp} = 1.46 \times 10^{-10}$

Threshold $[F^-]$ $Q = K_{sp}$

$$[Ca^{+2}][F^-]^2 = 1.46 \times 10^{-10}$$

$$(0.100M)[F^-]^2 = 1.46 \times 10^{-10}$$

$$[F^-] = 3.82 \times 10^{-5} M$$