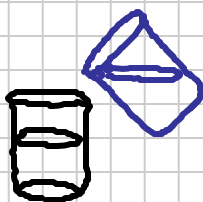


# Lecture 16.3: Will a ppt form?

Note Title

10/5/2011



- ✓ 50.0 mL
- ✓ BaCl<sub>2</sub> (aq)
- ✓ 1.00 × 10<sup>-4</sup> M

✓ [Ba<sup>2+</sup>] = 1.00 × 10<sup>-4</sup> M

[Cl<sup>-</sup>] = 2.00 × 10<sup>-4</sup> M

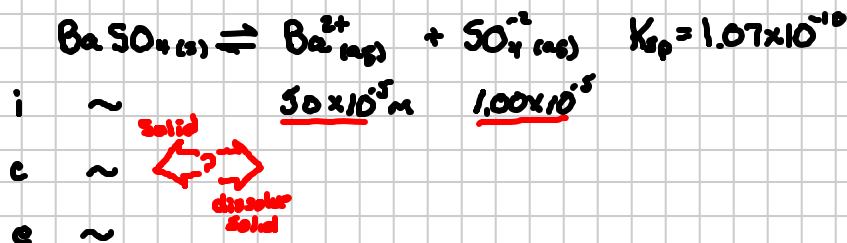
Dilution: mixing

$$M_1 V_1 = M_2 V_2$$

$$(1.00 \times 10^{-4}) (50.0 \text{ mL}) = M_2 (100.0)$$

$$M_2 = 5.0 \times 10^{-5} \text{ M}$$

50.0 mL ✓  
 Na<sub>2</sub>SO<sub>4</sub> (aq) ✓  
 2.00 × 10<sup>-2</sup> M  
 [Na<sup>+</sup>] = 4.00 × 10<sup>-2</sup> M  
[SO<sub>4</sub><sup>2-</sup>] = 2.00 × 10<sup>-2</sup> M



What is i.d. of ppt?

BaCl<sub>2</sub>: No!      Na<sub>2</sub>SO<sub>4</sub>: No!

NaCl: No!      BaSO<sub>4</sub>: Possible ppt

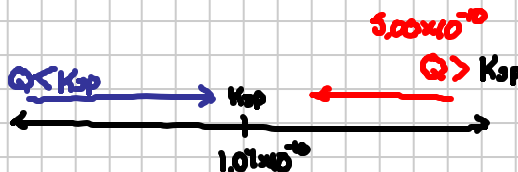
[Ba<sup>2+</sup>] ≅ [SO<sub>4</sub><sup>2-</sup>]: high enough conc.

Reaction Quotient: Q = [Ba<sup>2+</sup>][SO<sub>4</sub><sup>2-</sup>]

$$Q = [\text{Ba}^{2+}][\text{SO}_4^{2-}]$$

$$= (5.0 \times 10^{-5})(1.00 \times 10^{-5})$$

$$Q = 5.00 \times 10^{-10} > K_{sp}$$



Q > K<sub>sp</sub> ... reaction shift left.  
 ... produce a solid  
 ... ppt