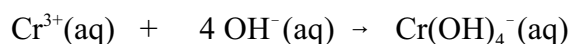


1. K_{sp} of $\text{Hg}(\text{OH})_2 = 3.0 \times 10^{-26}$ at 25°C . What is the molar solubility of $\text{Hg}(\text{OH})_2$ at this temperature? [fall 02, ex2]
- (a) 3.2×10^{-4} M (b) 2.0×10^{-9} M (c) 5.7×10^{-6} M
(d) 4.7×10^{-8} M (e) 2.9×10^{-8} M
2. What is the name of the ionic compound in the previous problem? [fall 02, ex2]
- (a) silver(II) oxide (b) mercury(II) hydroxide (c) mercury hydroxide
(d) silver hydroxide (e) mercury(I) oxide
3. In which **one** of the following solutions would you expect $\text{Hg}(\text{OH})_2$ to be even less soluble than it is in pure water? (K_f of $\text{Hg}(\text{CN})_4^{2-} = 9.3 \times 10^{28}$) [fall 02, ex2]
- (a) 0.1 M NaCl (b) 0.1 M HCl (c) 0.1 M NaOH (d) 0.1 M NaCN
4. What is the molar solubility of calcium fluoride in pure water? K_{sp} of calcium fluoride = 3.2×10^{-11} [spr 02, ex 2]
- (a) 2.9×10^{-8} M (b) 3.2×10^{-4} M (c) 5.7×10^{-6} M
(d) 4.7×10^{-8} M (e) 2.0×10^{-4} M
5. How will the solubility of calcium fluoride differ in acidic water compared to neutral water? [spr 02, ex 2]
- (a) it will be more soluble in acidic water
(b) it will be less soluble in acidic water
(c) the solubility in acidic water and neutral water will be the same
6. What is the molar solubility of Ag_3PO_4 in 0.050 M AgNO_3 ? K_{sp} of $\text{Ag}_3\text{PO}_4 = 2.6 \times 10^{-18}$ [fall 01, ex 2]
- (a) 4.7×10^{-7} M (b) 2.1×10^{-14} M (c) 1.3×10^{-19} M
(d) 9.4×10^{-3} M (e) 5.2×10^{-17} M
7. The solubility of $\text{Cr}(\text{OH})_3$ in pure water is 1.3×10^{-8} M. What is K_{sp} of $\text{Cr}(\text{OH})_3$? [fall 00, ex 2]
- (a) 9.1×10^{-3} (b) 2.9×10^{-32} (c) 4.7×10^{-3} (d) 1.3×10^{-16} (e) 7.7×10^{-31}

8. Will the solubility of $\text{Cr}(\text{OH})_3$ in 0.10 M CrCl_3 be larger than, smaller than or the same as in pure water? [fall 00, ex 2]

(a) larger (b) smaller (c) the same

9. The following reaction has a K of 8.0×10^{29} : [fall 00, ex 2]



Based on the above, do you expect the solubility of $\text{Cr}(\text{OH})_3$ in basic media, to be larger than, smaller than or the same as in neutral water?

(a) larger (b) smaller (c) the same

10. A solution contains 0.010 M silver ion and 0.0010 M lead(II). Sodium sulfate is dissolved to give a nominal concentration of 0.0010 M sulfate. Does a precipitate form? If so, is it silver sulfate, lead(II) sulfate or both? K_{sp} of silver sulfate = 1.5×10^{-5} ; K_{sp} of lead(II) sulfate = 1.6×10^{-8} [fall 02, ex 2]

(a) no precipitate forms (b) only silver sulfate precipitates
(c) only lead(II) sulfate precipitates (d) both silver sulfate and lead(II) sulfate precipitate

11. A solution contains 1.0×10^{-3} M Ba^{2+} and 1.0×10^{-3} M Ca^{2+} . NaF is then dissolved to give a nominal concentration of 1.0×10^{-2} M. Does a precipitate form? If so, is it BaF_2 , CaF_2 or both? K_{sp} of BaF_2 = 1.5×10^{-6} ; K_{sp} of CaF_2 = 3.2×10^{-11} [fall 01, ex 2]

(a) CaF_2 precipitates (b) BaF_2 precipitates
(c) both BaF_2 and CaF_2 precipitate (d) no precipitate forms

Answers: 1 b, 2 b, 3 c, 4 e, 5 a, 6 b, 7 e, 8 b, 9 a, 10 c, 11 a.