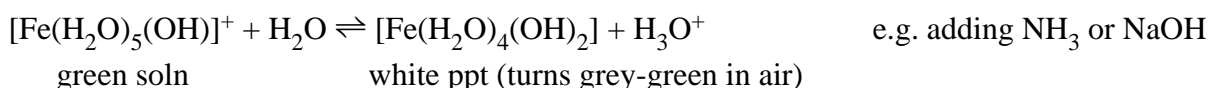
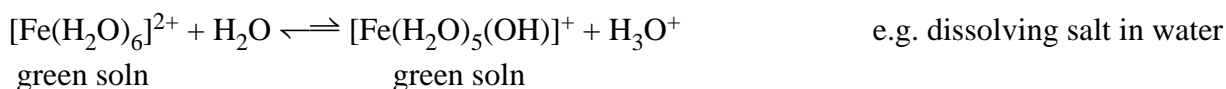


Transition metal ions and colour

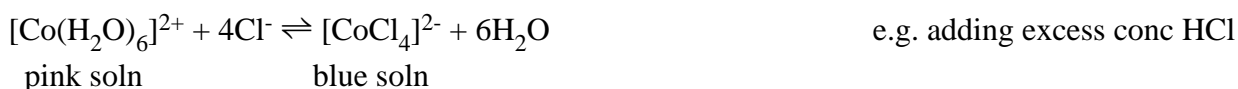
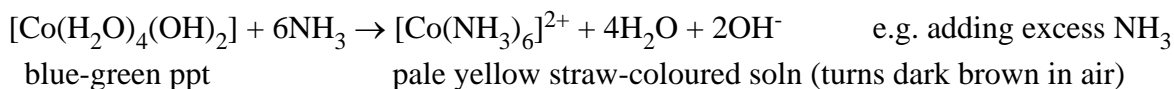
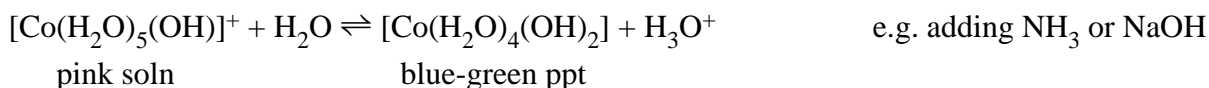
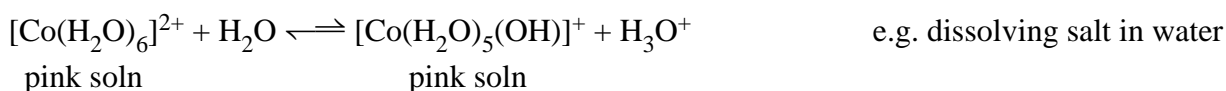
Metal(II) salts

Iron(II)

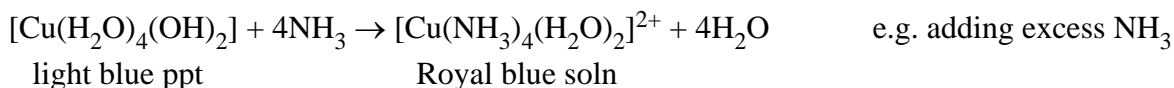
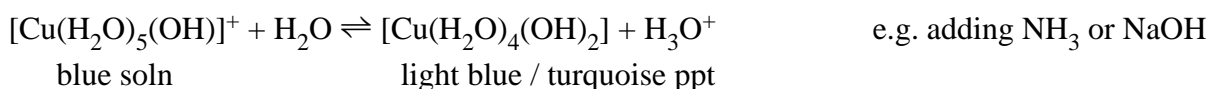
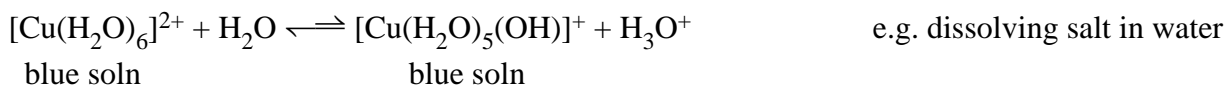


Adding CO_3^{2-} ions to solutions of iron(II) ions produces a white precipitate of FeCO_3

Cobalt(II)



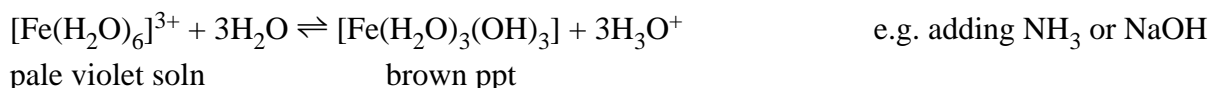
Copper(II)



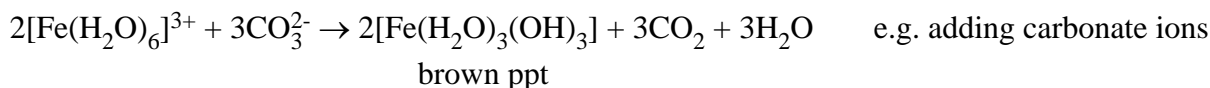
Adding CO_3^{2-} ions to solutions of copper(II) ions produces a green precipitate of $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$

Metal(III) salts

Iron(III)

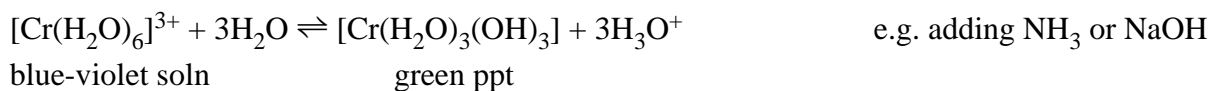


Note: $[\text{Fe}(\text{H}_2\text{O})_3(\text{OH})_3]$ actually exists as $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ and forms $\text{FeO}(\text{OH})$ ("rust") when dry.

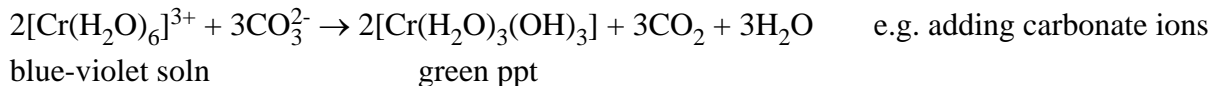
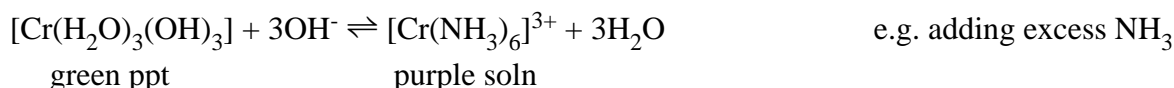
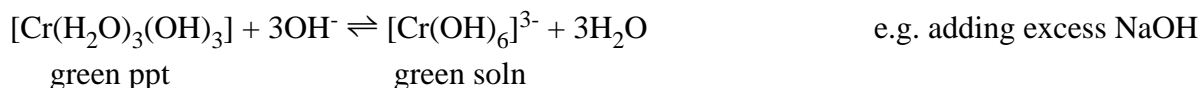


Note: $\text{Fe}_2(\text{CO}_3)_3$ is not formed in solution by adding carbonate solutions.

Chromium (III)



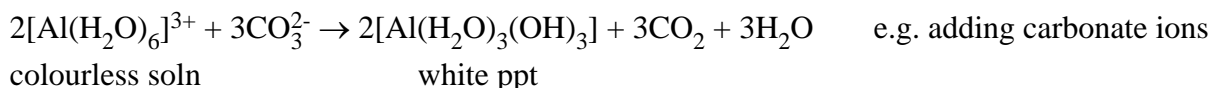
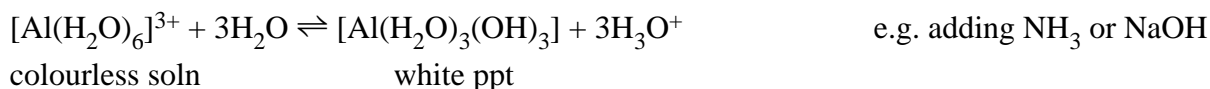
Note: $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ solutions which contain chloride ions or sulphate ions will appear green.



Note: $\text{Cr}_2(\text{CO}_3)_3$ in solution is not formed by adding carbonate solutions.

Aluminium

This is not a transition metal, but is included because its hydroxide is amphoteric like chromium hydroxide, and its chemistry is similar in this respect.



Note: $\text{Al}_2(\text{CO}_3)_3$ in solution is not formed by adding carbonate solutions.

Other ions

You also need to know some redox reactions of vanadium, chromium and manganese.