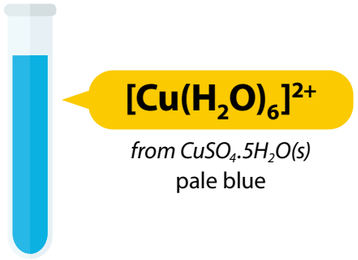
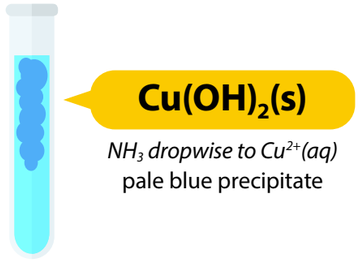
A LEVEL *CHEMISTRY A*

OCR
Oxford Cambridge and RSA



$[Cu(H_2O)_6]^{2+}$

from $CuSO_4.5H_2O(s)$
pale blue

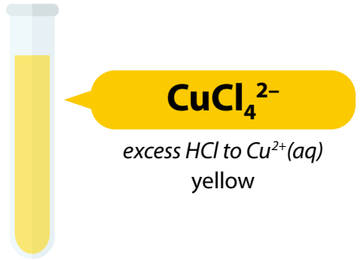


$Cu(OH)_2(s)$

NH_3 dropwise to $Cu^{2+}(aq)$
pale blue precipitate

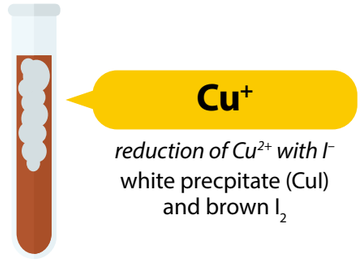
$[Cu(NH_3)_4(H_2O)_2]^{2+}$

excess NH_3 to $Cu^{2+}(aq)$
dark blue



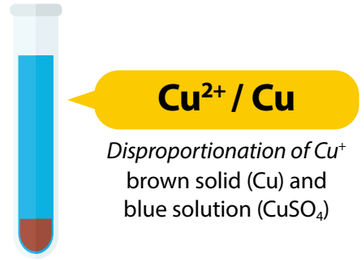
$CuCl_4^{2-}$

excess HCl to $Cu^{2+}(aq)$
yellow



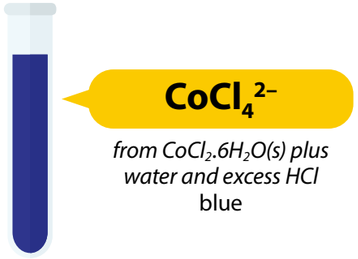
Cu^+

reduction of Cu^{2+} with I^-
white precpitate (CuI)
and brown I_2



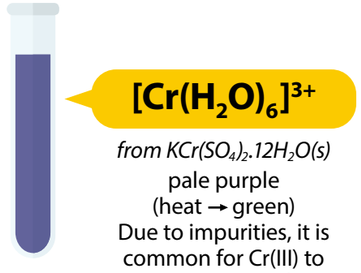
Cu^{2+} / Cu

Disproportionation of Cu^+
brown solid (Cu) and
blue solution ($CuSO_4$)



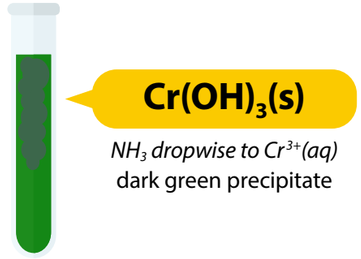
$CoCl_4^{2-}$

from $CoCl_2.6H_2O(s)$ plus water and excess HCl
blue



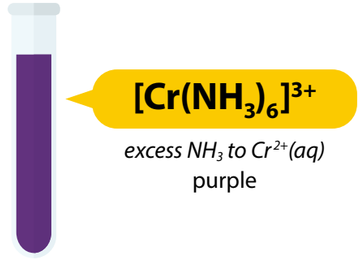
$[Cr(H_2O)_6]^{3+}$

from $KCr(SO_4)_2.12H_2O(s)$
pale purple
(heat → green)
Due to impurities, it is common for Cr(III) to appear green in solution



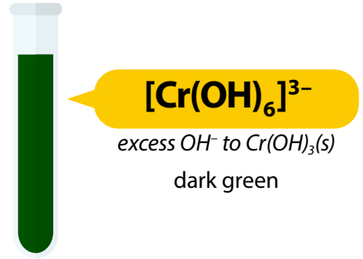
$Cr(OH)_3(s)$

NH_3 dropwise to $Cr^{3+}(aq)$
dark green precipitate



$[Cr(NH_3)_6]^{3+}$

excess NH_3 to $Cr^{2+}(aq)$
purple

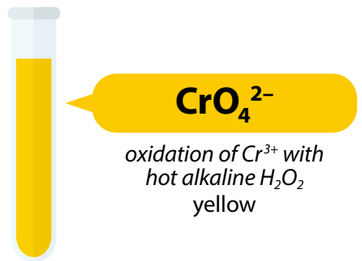


$[Cr(OH)_6]^{3-}$

excess OH^- to $Cr(OH)_3(s)$
dark green

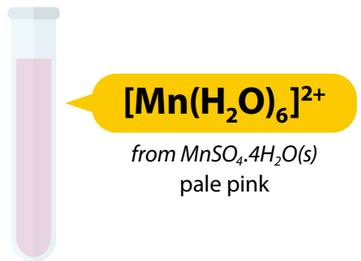
$Cr_2O_7^{2-}$

from $K_2Cr_2O_7(s)$ in 0.1mol dm^{-3} H_2SO_4
orange



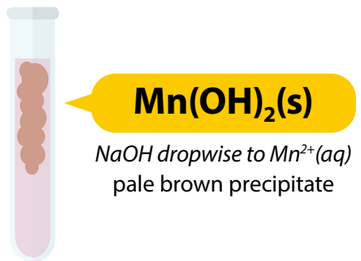
CrO_4^{2-}

oxidation of Cr^{3+} with hot alkaline H_2O_2
yellow



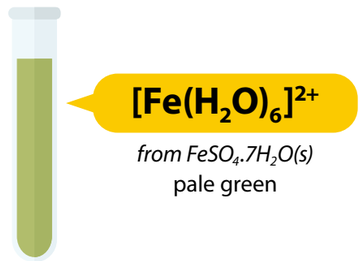
$[Mn(H_2O)_6]^{2+}$

from $MnSO_4.4H_2O(s)$
pale pink



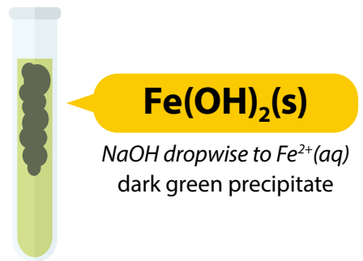
$Mn(OH)_2(s)$

NaOH dropwise to $Mn^{2+}(aq)$
pale brown precipitate



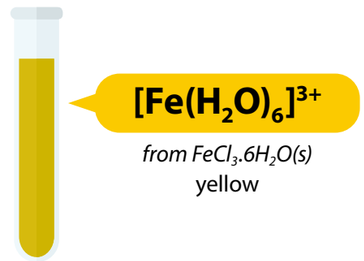
$[Fe(H_2O)_6]^{2+}$

from $FeSO_4.7H_2O(s)$
pale green



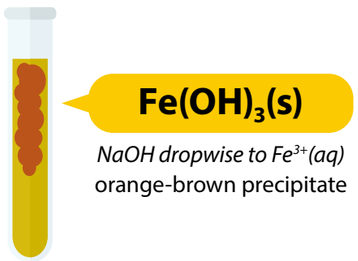
$Fe(OH)_2(s)$

NaOH dropwise to $Fe^{2+}(aq)$
dark green precipitate



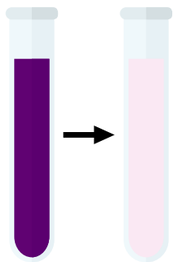
$[Fe(H_2O)_6]^{3+}$

from $FeCl_3.6H_2O(s)$
yellow



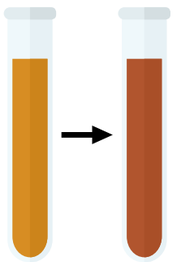
$Fe(OH)_3(s)$

NaOH dropwise to $Fe^{3+}(aq)$
orange-brown precipitate



$MnO_4^-/Fe^{2+} \rightarrow Mn^{2+}/Fe^{3+}$

purple (MnO_4^-) to pale pink (Mn^{2+})
(in titrations, so dilute that it is practically colourless)



$I^-/Fe^{3+} \rightarrow I_2/Fe^{2+}$

orange brown (Fe^{3+}) to brown (I_2)

Colours of inorganic ions and complexes