



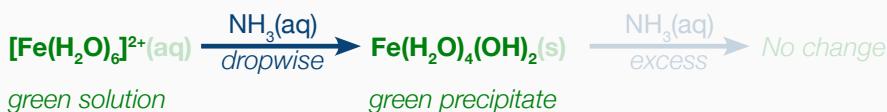
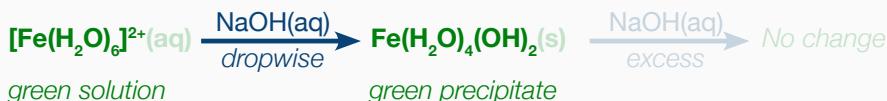
# Inorganic Revision Sheet

## Metal Aqua Ion Reactions for OCR (A)

### Fe<sup>2+</sup>, Fe<sup>3+</sup>, Cu<sup>2+</sup>, Cr<sup>3+</sup> and Mn<sup>2+</sup>

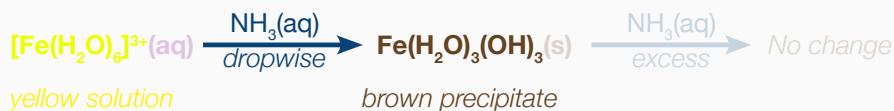
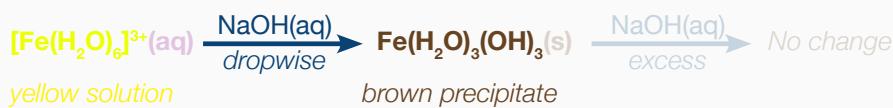
#### Iron (II), Fe<sup>2+</sup>

dropwise NaOH or NH<sub>3</sub> = green ppt  
excess NaOH = no change  
excess NH<sub>3</sub> = no change



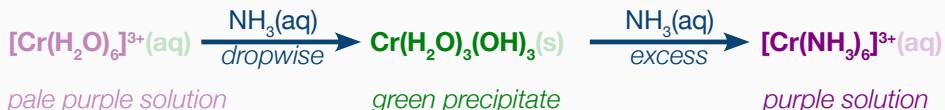
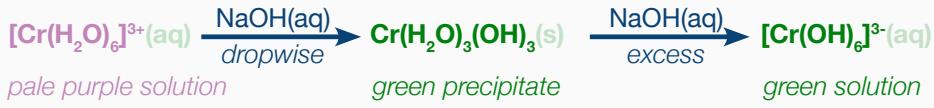
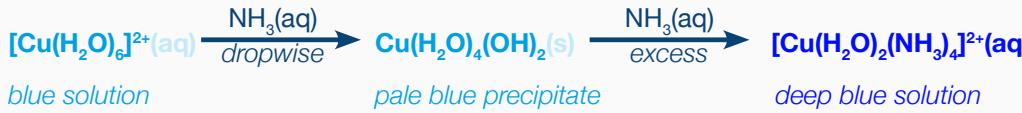
#### Iron (III), Fe<sup>3+</sup>

dropwise NaOH or NH<sub>3</sub> = brown ppt  
excess NaOH = no change  
excess NH<sub>3</sub> = no change



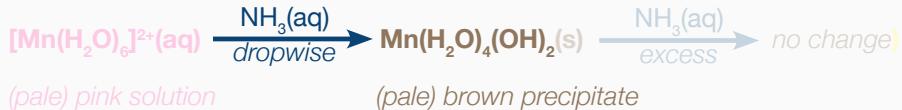
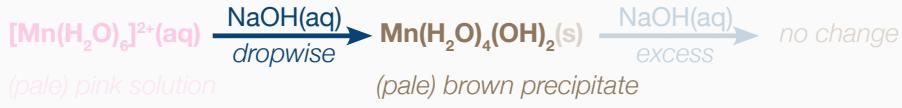
#### Copper (II), Cu<sup>2+</sup>

dropwise NaOH or NH<sub>3</sub> = blue ppt  
excess NaOH = no change  
excess NH<sub>3</sub> = deep blue solution



#### Manganese (II), Mn<sup>2+</sup>

dropwise NaOH or NH<sub>3</sub> = brown ppt  
excess NaOH = no change  
excess NH<sub>3</sub> = no change





# Inorganic Revision Sheet

## Metal Aqua Ion Reactions for OCR (A)

## - Changing Oxidation States



$\text{Fe}^{2+}(\text{aq})$  can be oxidised to  $\text{Fe}^{3+}(\text{aq})$  by  $\text{H}^+/\text{MnO}_4^-$



$\text{Fe}^{3+}(\text{aq})$  can be reduced to  $\text{Fe}^{2+}(\text{aq})$  by  $\text{I}^-$



$\text{Cr}^{3+}(\text{aq})$  can be oxidised to  $\text{CrO}_4^{2-}(\text{aq})$  with  $\text{H}_2\text{O}_2 / \text{OH}^-$   
 $\text{CrO}_4^{2-}(\text{aq})$  is easily converted to  $\text{C}_2\text{O}_4^{2-}$  with addition of  $\text{H}^+$



$\text{Cr}_2\text{O}_7^{2-}(\text{aq})$  can be reduced to  $\text{Cr}^{3+}(\text{aq})$  with  $\text{Zn}/\text{H}^+$



$\text{Cu}^{2+}(\text{aq})$  can be reduced to  $\text{Cu}^+(\text{aq})$  with  $\text{I}^-$ .  
 $\text{Cu}^+(\text{aq})$  disproportionates readily to  $\text{Cu}^{2+}(\text{aq})$  and  $\text{Cu}(\text{s})$

## -Ligand Exchange

