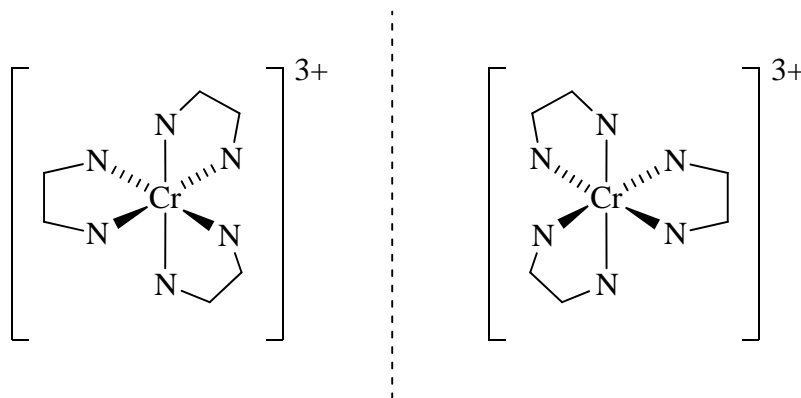


- The species  $[\text{Cr}(\text{en})_3][\text{FeCl}_4]_3$  is an example of a salt in which both the anion and cation are comprised of coordination complexes. Name the complex using standard IUPAC nomenclature (en = ethane-1,2-diamine).

***tris(ethane-1,2-diamine)chromium(III) tetrachloridoferrate(III)***

Draw the structure of the cation. Is this complex chiral? Briefly explain your reasoning.



**Yes, it is chiral as it is not superimposable on its mirror image.**

If the salt is dissolved in water and a saturated solution of KCl is added to the solution, different coloured complexes can be crystallised from the solution. Write the formulae for two of these complexes.

**$[\text{Cr}(\text{en})_3][\text{FeCl}_4]_2\text{Cl}$ ,  $[\text{Cr}(\text{en})_3][\text{FeCl}_4]\text{Cl}_2$ ,  $[\text{Cr}(\text{en})_3]\text{Cl}_3$  and  $\text{K}[\text{FeCl}_4]$  are all possible.**