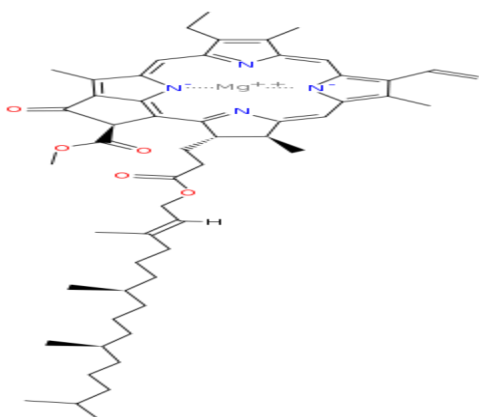
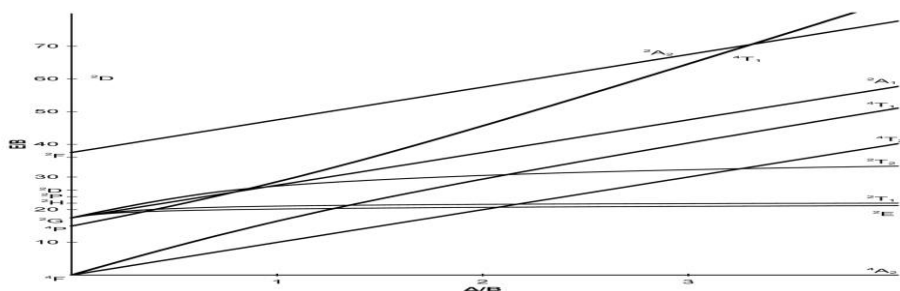


Scheme 1. Arrows show the ligand (Oxygen in this case) to metal (Mn^{7+} in this case) charge transfer (LMCT) responsible for the deep color of permanganate (MnO_4^-). See Figure 1 for the values of the electronic transitions of $KMnO_4$.



Scheme 2. The high degree of conjugation of the chlorophyll molecule is the reason for the green color of chlorophyll. Structure of chlorophyll is known in many references such as Ref #19. The following is another example (Fleming, Ian, Nature, October 14th 1967, 216: 151-152, Absolute configuration and the structure of Chlorophyll).



Scheme 3. Tanabe-Sugano diagram for d^3 metal ions (Cr^{3+} is a d^3 metal ion). The color of the Cr^{3+} metal ion is due to the following electronic transitions: ${}^4A_{2g}$ to ${}^4T_{1g}$ (which appeared at 420 nm) and due to ${}^4A_{2g}$ to ${}^4T_{2g}$ electronic transitions (which appeared at 580 nm) see Figure 3. Data were taken from reference #14. The original reference by Tanabe and Sugano is J Phys Soc Jpn 9: 766-779, 1954.