

1. How does acetylacetonate coordinate to Mn^{3+} ? Please sketch this. What is the geometry around the metal?

2. Balance this electrochemical reaction.



3. Does the $\text{Mn}(\text{acac})_3$ complex obey the 18 electron rule? If not, how many total valence electrons are present on the metal?
4. If you measure a chemical shift of 4.8 ppm on a 500 MHz NMR, what frequency does this shift correspond to?

5. Consider the complex $[\text{Fe}(\text{en})_2\text{Br}_2]^+$.
 - a. How many unpaired electrons are on iron if this complex is low spin? How about high spin?
 - b. Determine the ligand contribution to the magnetic susceptibility, $\chi_{\text{M}}(\text{ligands})$.