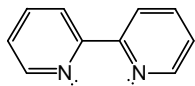
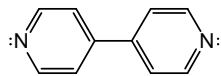


Chapter 14 Exercises

1. 2,2'- and 4,4'-bipyridine are bidentate ligands (see below). Can each be chelating, bridging, or both? Explain.



2,2'-bipyridine



4,4'-bipyridine

2. In Example 14.1, we used the fact that CoBr_2 is green while CoCl_2 is blue to determine the relative ligand field strengths of bromide and chloride ions. Explain why dissolving both of these substances in water results in a red solution. Which has a stronger ligand field, water or halide ion?
3. How many d electrons does Co^{2+} contain? What is the spin of Co^{2+} in a weak octahedral field? What is the spin of Co^{2+} in a strong octahedral field?
4. Draw all possible isomers of $\text{Co}(\text{NH}_3)_4\text{Cl}_2$. Draw all possible isomers of $\text{Co}(\text{NH}_3)_3\text{Cl}_3$.
5. What is the role of the magnesium ion in photosynthesis?
6. Draw the heme group and discuss its role in respiration.
7. Discuss the coordination chemistry of carbon monoxide poisoning.
8. Explain the function of cisplatin in treating cancer.
9. Explain how a partial reduction of an empty band results in conductivity.
10. Four- and five-coordinate transition metal complexes frequently function as homogeneous catalysts, but catalytic six-coordinate complexes are rare. Explain.