

Problem set 10

1. A compound with the empirical formula CsAuCl_3 is diamagnetic and has gold in two different coordination environments. Give a plausible structure.
2. What is the principle manifestation of relativity in main group chemistry?
3. Explain why AuBrR_2 complexes are dimeric but $\text{AuBr}_2(\text{CN})$ complexes are tetrameric.
4. $\text{U}(\text{OMe})_6$ sublimes in a vacuum at 87°C . It has been suggested as an alternative for UF_6 for the purposes of uranium enrichment. Discuss the advantages and disadvantages of this compound for the purpose.
5. $\text{UO}_2(\text{OSO}_2\text{CF}_3)_2$ reacts with excess KI in diethyl ether to give an orange solution of **A**. Treatment of the solution with pyridine gives a red powder **B**, which analyzes as C 23.52 %, H 1.94 %, N 5.67 %. Identify **A** and **B** as fully as possible using the data and your understanding of U chemistry. Can spectroscopic methods fully assign the structure?