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### Literature Discussion: In-Class Questions

**Article:** Danis, J. A.; Lin, M. R.; Scott, B. L.; Eichhorn, B. W.; and Runde, W. G. *Inorg. Chem.* **2001**, 40, 3389-3394.

**Title:** Coordination Trends in Alkali Metal Crown Ether Uranyl Halide Complexes: The Series  $[A(\text{Crown})]_2[\text{UO}_2\text{X}_4]$   
Where A = Li, Na, K, and X = Cl, Br

1. What was the purpose of the crown ethers in the crystallization experiments carried out in this article, and why were different crown ethers used for the different Group I metals?
2. Explain whether 15-crown-5 would be similarly effective to stabilize a cation like cesium. Draw another molecule that might work towards that purpose.
3. Look at the bond distances in Table 1. Why is the U-O<sub>Ur</sub> bond length in **6** significantly longer than the one in **5**?
4. Look at the structures you drew for compounds **1-6**. Using the concepts discussed in class on Wednesday, explain the trend in binding selectivity of the Group I metals to the uranyl compounds.
5. Let's say you managed to synthesize an analogous uranyl halide compound with the formula  $[\text{Na}(15 - \text{crown} - 5)]_2[\text{UO}_2\text{I}_4]$ . Draw what you would predict its structure to be.