Ionophores play an important role in the area of molecular recognition because of their ability to selectively bind specific metal ions. In a variety of fields including chemistry and biology, crown ethers are the prototypical model. Two of the most common crown ethers are 12 crown 4 (12c4) and 18 crown 6 (18c6). We have used infrared spectroscopy to study the microsolvation of the $\text{K}^+(12c4)(\text{H}_2\text{O})_n$ and $\text{K}^+(18c6)(\text{H}_2\text{O})_n$ systems for $n=1-4$ in the O–H stretching region of water. Additionally, we will present new studies where these complexes have been tagged with argon. Since the argon-tagged complexes are colder than their untagged counterparts, we can consider the effect of temperature in these systems. These spectroscopic studies, combined with ab initio calculations, can be used to characterize the competing non-covalent interactions, and thus understand the molecular basis behind the selectivity exhibited in the condensed phase.