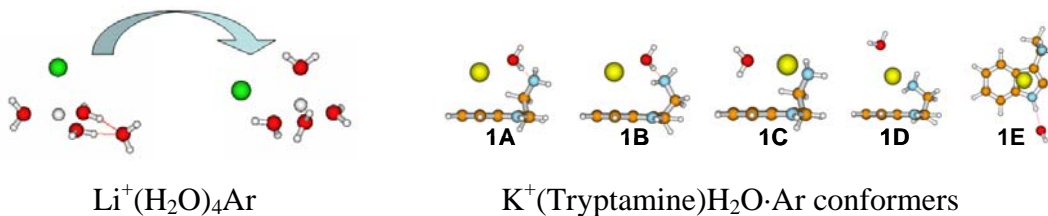


Non-Covalent Intermolecular Interactions: Competition, Balance and Size-Selectivity in Cluster Ions

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Non-covalent interactions, such as electrostatic ion-molecule, hydrogen bonding and van der Waals, can play important roles in the size-selective behavior of ion channels in biological systems, in selective sequestration by ionophores, and at interfaces. The competition and balance between these forces can be shifted by slight changes in composition and temperature. Cluster ions offer an ideal controlled environment for assessing these effects. Using mass spectrometric methods, changes in structure can be probed using infrared laser spectroscopy in a mass-selective (and thus size- and composition-selective) manner. The dynamical process of forming these cluster ions can also be exploited to vary the internal energy (or effective temperature) in these systems. This can lead to different structures that are either enthalpically- or entropically-favored, as well as trapping high energy conformers on the potential energy surface. Examples from our laboratory will be presented.



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