

"Chemistry of Multiply-Charged Ions: From Atoms to DNA"

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I shall explore the influence of charge state on the gas-phase reactivity of both positive and negative ions with small molecules at room temperature. The presentation will focus on reactions of cations and dications of metal atoms, singly and multiply charged cations of C_{60} and multiply charged anions of selected oligodeoxynucleotides. Large changes in reactivity are observed as a function of charge state and the sign of the charge. Both thermodynamics and electrostatics (especially Coulomb repulsion) are seen to be decisive in determining chemical reactivity. Rate measurements were performed with our Selected-Ion Flow Tube coupled to an Electron Impact (EI), an Inductively-Coupled Plasma (ICP), or an Electrospray (ESI) ionization source.