

Gas-Phase Metal Ion Chemistry Leading to the Designing of an Electrospray Ionization (ESI) Source

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It is well recognized that metal ions have catalytic properties that can be utilized in the sigma bond-activation of hydrocarbons. These processes are important in the production of alternative fuels. Studies of bare metal ions can provide us with fundamental insights into the nature of these bond-activation steps. Reactions of gas-phase nickel ions with CH_3X and CF_3X ($\text{X}=\text{Cl}, \text{Br}, \text{I}$) showed that the ground state and excited states Ni^+ correlate to different types of products. NiX^+ is a significant product of these reactions. We have designed an ESI source to study the product of these halogenated metal ions.