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Mechanisms of Ion-Molecule Reactions in Cyclohexane CHARLES JIAO, UES, STEVEN ADAMS, Air Force Research Laboratory — Cyclohexane is one of the important components in practical fuels and has been chosen as representative cycloalkanes in several proposed surrogate mixtures for jet fuels. We have recently studied the gas-phase ion-molecule reactions in cyclohexane, using Fourier-transform mass spectrometer (FTMS). By experiments with isotope reagents, the reaction mechanisms are studied. Hydride transfer is the most common reaction channel. For small reactant ions such as $C_2H_3^+$, it proceeds via direct hydride transfer mechanism, while for large reactant ions such as $C_4H_7^+$, it proceeds via complex formation. Other reaction mechanisms include charge transfer, H_2^- transfer, H_3^- transfer, CH_3^- transfer, $C_2H_4^-$ transfer, and association.

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