TRANSITION METAL ASSISTED DECOMPOSITION KINETICS OF ORGANIC MOLECULES: MODELS FOR CATALYSIS

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Instrumentation has been developed for measuring kinetic parameters for gas phase decomposition reactions activated by transition metal cations. This technique combines laser spectroscopy with mass spectrometry and fragment energy analysis. These reactions occur on the microsecond timescale. Reactants are formed as binary clusters in a jet-cooled expansion. Tunable laser radiation delivers well-defined energy impulses to the reactants. Kinetic information is gleaned from the ensuing unimolecular decomposition reaction. This talk focuses on a comparison study of the low-energy decomposition dynamics of acetone activated by the nickel and cobalt cations.