2.028 Kinetics of Criegee Intermediates.

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Abstract:

Ozonolysis of unsaturated hydrocarbons would produce very reactive Criegee intermediates, which are relevant in atmospheric chemistry, including OH radical formation, oxidation of atmospheric gases like SO_2, NO_2, volatile organic compounds, organic and inorganic acids, and even water. We have investigated the kinetics of Criegee intermediate reactions with UV and IR absorption spectroscopy. We found that there are strong structure dependences of Criegee intermediates in their thermal decomposition and reactions with water vapor (monomer and dimer), methanol, etc. Our results indicate that various Criegee intermediates have different fates in the atmosphere. Syn and dialkyl-substituted Criegee intermediates decompose quickly to release OH radicals; this reaction involves hydrogen atom transfer and has large isotope effect. Anti and simplest Criegee intermediates would be consumed by reactions with tropospheric water vapor.

References:

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