

Abstract Submitted
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Isomer Specific Ion Chemistry JAMES GREENBERG, PHILIPP SCHMID, MIKHAIL MILLER, HEATHER LEWANDOWSKI, Univ of Colorado - Boulder — The high level of control achievable in an ion trap provides a prime environment for gas-phase physical chemistry experiments. Additionally, sensitive detection techniques allow for the study of highly reactive and/or rare molecular species such as cations and radicals. Reaction studies of these species are important for understanding the chemistry of extreme environments like the atmosphere or the interstellar medium. We present the results of an isomer specific reaction between two basic building blocks of organic chemistry: Acetylene cations ($C_2H_2^+$) and C_3H_4 . Propyne ($HCCCH_3$) and Allene (H_2CCCH_2) are two stable isomers of C_3H_4 and are shown to produce different products. Through the use of a coupled time of flight mass-spectrometer, we also characterized the kinetics of each reaction. These measurements are enabled by many tools familiar to ion trapping experiments, including: laser cooling of atomic ions, sympathetic cooling of molecular ions, secular (resonant) mass excitation, and fluorescence detection of trapped ions.

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