

## PRODUCT BRANCHING RATIO MEASUREMENTS AT LOW TEMPERATURES FOR REACTIONS OF THE CN RADICALS WITH HYDROCARBONS

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Molecular clouds are known to host a rich chemistry despite seemingly unfavorable conditions. In particular, a wide variety of cyano-polyynes and cyano-aromatic species have been detected in the past years. These nitrile compounds are also present in the atmospheres of various moons such as Titan. This suggests that the CN radical may be a vector of a rich chemistry in astrophysical media. To further understand the abundances of these molecules, astrochemical models are needed. These require accurate kinetic parameters, including rate coefficients and branching ratios measured at low temperature. Here, we present a new implementation of the Chirped Pulse in Uniform Flow (CPUF) technique, designed for branching ratio measurements. It combines the CRESU (Cinétique de Réaction en Ecoulement Supersonique Uniforme) technique to reach low temperatures, with molecular beam sampling into an E-band chirped pulse Fourier transform millimeter wave spectrometer to detect reaction products. For the reaction between CN and propene we have measured the branching fraction of the vinyl cyanide channel at 35 and 50 K. Upper limits for all the different cyanopropene isomer channels were also determined. Theoretical calculations of the reaction potential energy surface and product branching fractions will be also be presented along with our latest results on other CN + hydrocarbon reactive systems.