

## ROTATIONAL SPECTROSCOPY OF CHEMICAL REACTIONS IN A CRYOGENIC BUFFER GAS CELL

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Low temperature reactions play a critical role in the chemistry of the interstellar medium (ISM). Measuring the kinetics of these reactions is key to constraining models of ISM chemistry, and to understanding ISM chemistry at large. However, measuring chemical kinetics at temperatures relevant to the ISM presents numerous experimental challenges, including creating homogeneous and cooled reactants. Buffer gas cooling offers a near universal method of achieving uniform electronic, vibrational, rotational, and translational cooling, while consuming minimal sample. When combined with microwave spectroscopy, buffer gas cooling cells offer a unique method for probing reactions occurring at very low temperatures. We will report our progress in building and characterizing a buffer gas cell configuration capable of measuring bimolecular reactions of thermalized species occurring within the cell, and discuss its applications for studying ISM chemistry.