BROADBAND ROTATIONAL SPECTROSCOPIC DETECTION OF BUFFER GAS COOLED MOLECULES DESORBED FROM AN ICE: ISOMER AND CONFORMER-SPECIFIC BRANCHING RATIOS OF N- AND I-PROPANOL

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A new instrument which combines buffer gas cooling with broadband rotational spectroscopy to detect molecules desorbed from an ice surface is described. Here, we report isomer and conformer-specific branching ratios of n- and i-propanol, the former of which contains 5 symmetry-unique conformations (Ga, Aa, Ag, Gg, and Gg'). Following deposition of these species at 4 K, temperature-programmed desorption is performed where the sublimed molecules are injected into a 25 K buffer gas cell (BGC) and detected with broadband rotational spectroscopy in the 60 – 90 GHz regime. We compare these results with direct room temperature gas-phase injection and report differences in the conformer branching ratios for species that are first deposited onto an ice at 4 K and sublimed, versus those observed following direct gas-phase injection and cooled within a BGC.