

Abstract Submitted
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Enhancing the trap density of hydroxyl radicals with skimmer cooling¹ HAO WU, DAVE REENS, Univ of Colorado - Boulder, TIM LANGEN, Universitt Stuttgart, YUVAL SHAGAM, Univ of Colorado - Boulder, DANIELA FONTECHA, North Carolina State University, JUN YE, Univ of Colorado - Boulder — The large density and low temperature offered by supersonic expansions of molecular beams have enabled groundbreaking development in precision spectroscopy, chemical reaction kinetics, molecular dynamics, and so on. However, beam attenuation due to skimmer interference generally limits the beam density that can be realized. It was recently shown that skimmer cryocooling could suppress shockwaves involved in skimmer interference (Segev et al, *Sci. Adv.* 2017,**3**, e1602258). We have applied the skimmer cooling technique to hydroxyl radicals and perform for the first time a direct comparison between a cold skimmer and a state of the art room temperature skimmer. Our comparison reveals a 30-fold density enhancement for hydroxyl radicals. By combining the cooled skimmer with a downstream stark decelerator and quadrupole magnetic trap, we will be able to increase the trapping density to further study collisional effects between radicals.

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