

Abstract Submitted
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Production of Cold NO Molecules JASON ALEXANDER, BRYAN BICHSEL¹, MICHAEL MORRISON, NEIL SHAFER-RAY, ERIC ABRAHAM, University of Oklahoma — Although the success of laser cooling and trapping has had a major impact on atomic physics, the requirements of simple internal structure have limited its use to a few atomic species. A modified Stark guide can be used as a source for cold polar molecules by filtering the cold fraction from a thermal source. We present experimental results for the enhancement of the lowest ro-vibrational states from an effusive source of nitric oxide by the Stark guide capturing those particles with the lowest transverse velocities. By inserting a sphere in our straight guide, we block line-of-sight trajectories between the source and the output of the guide. We have implemented the principle of velocity selection, only those molecules with sufficiently low energies to reflect from the guide will make it to the output. Using a field-stabilized Rydberg time of flight technique we measure the output speed distributions from this filtered source to be between 7-20 K, depending on strength of guide field.

¹Presently Oklahoma Pan Handle State University

Jason Alexander
University of Oklahoma

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