

Abstract Submitted  
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**Investigations of Molecular Emission from Laser Ablation Plumes Interacting with Background Gases of Varying Density**<sup>1</sup> JEREMY IRAT-CABAL, AARON COVINGTON, University of Nevada, Reno-Physics Department/Nevada Terawatt Facility, MANOLO SHERRILL, Los Alamos National Laboratory — Laser ablation of solid targets provides a versatile platform for investigating the interplay between molecular spectral emission and fluid dynamic properties of low-temperature plasmas. To this end, we have developed an experimental apparatus capable of measuring the plasma plume's spatial- and temporal-evolution in a controlled environment. Changes in molecular emission were recorded as a function of changing the Reynolds number of the background gas by varying gas pressure and species. In the experiments, time-gated molecular spectra were measured from plumes produced from low- to mid-Z targets with laser intensities ranging from  $10^7$  to  $10^{11}$  W/cm<sup>2</sup>. The experimental results will be discussed within the framework of radiation hydrodynamic models being developed to describe these complex plasma phenomena.

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