

Abstract Submitted  
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**Acceleration and radiation processes in controlled gradient gas jets**<sup>1</sup> DMITRI KAGANOVICH, MIKE HELLE, DANIEL GORDON, Naval Research Laboratory, FRANK XIE, RSI, Lanham, MD, ANTONIO TING, Naval Research Laboratory — The controlled gradient gas jet was designed, constructed and tested at the Naval Research Laboratory. The gas jet is using a laser generated shock wave to control the density gradient between vacuum and neutral gas. The length scale of the density gradient is fully controlled by the strength of the shock wave and can be varied continuously from under 10  $\mu\text{m}$  in case of strong shock to a 100  $\mu\text{m}$  for a weak shock wave. To verify the experimental results a simulation was run to model the system using a three-dimensional hydrodynamic code, SPARC, developed at the Naval Research Laboratory. Controlling the gas density gradient is important for electrons and protons acceleration, as well as for optical transition radiation generation. Experiments on using the controlled gradient gas jet and preliminary results on electron acceleration will be presented.

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