

Abstract Submitted  
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**Impact of Gas Chemistry on Free-Space Microwave Driven Plasmas** REMINGTON REID, Air Force Rsch Lab-Kirtland, ADRIAN LOPEZ, PAUL LEPELL, Leidos — The United States Air Force is studying the properties of plasmas sustained using focused microwave beams in free-space. While we have previously demonstrated the possibility to sustain these plasmas indefinitely the plasmas have been found to be unstable across a wide parameter space. The plasma stability has been shown to depend critically on the compositions of the background gas, however to date these results have been poorly quantified. A new precision gas flow system enables us to control the composition of the background gas. We will report on our efforts to quantify the effect of background gas composition on the plasma stability.

Remington Reid  
Air Force Rsch Lab-Kirtland

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