

Abstract Submitted  
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**First Evidence of Inverse Bremsstrahlung in Laser Enhanced Laser Induced Plasmas**<sup>1</sup> D.L. WIGGINS, C.T. RAYNOR, E.D. MEZONLIN, J.A. JOHNSON III, Florida A&M University — Plasmas are created using a Nd-YAG 1020mJ laser at 532nm in air at atmospheric pressures. We bathed the plasma with a 1080nm laser beam from a continuous wave fiber laser with powers of 50 W to 1 kW. We have observed the apparent effects of inverse bremsstrahlung in the plasma as the cw laser power increases. Specifically, with increasing cw fiber laser power the electron temperature increases and then begins to saturate after a threshold as predicted due to inverse bremsstrahlung. Furthermore, after a threshold, the signal to noise in the ion lines increases and the signal to noise in the neutral lines decreases as predicted. Implications from these results for astrophysical plasmas as well as plasmas produced for remote sensing in laser induced breakdown spectroscopy are discussed.

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