Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Electron Temperature Measurements in a Turbulent Laser Enhanced Laser Induced Plasma[1] DELONIA WIGGINS, CHARLEMAGNE AKPOVO, CHAVIS RAYNOR, JOSEPH JOHNSON, Florida A&M University — Since it has been shown that, an additional laser can change the spectroscopy of the laser induced plasmas, we will impose on the plasma a strong continuous wave fiber laser signal with a high energy density. A Nd-YAG pulsed laser of wavelength 532 nm with a maximum energy of 450 mJ creates a plasma at a focal point in the path of a 1kW cw fiber laser beam of wavelength 1080 nm. The plasma is created in air and a test chamber filled with different gas mixtures at different pressures. The optical emissions from this turbulent plasma were captured with two fiber optic cables and transmitted first to two monochrometers and ultimately to an ICCD and an oscilloscope. From the emissions of the plasma, the spectra of both the ionized and neutral lines can be captured using the ICCD. Both spectra are influenced as the power of the cw fiber laser increases. We will determine the influence of the cw fiber laser's properties on the turbulent properties and the local electron temperature of the pulsed laser induced plasma along with the role which the cw fiber laser plays in the evolution of turbulent parameters in the system.

[1]Research supported in part by grants from the US Army SMDC and the National Science Foundation.

Delonia Wiggins
Florida A&M University

Date submitted: 20 Aug 2008 Electronic form version 1.4