

Abstract Submitted
for the SES11 Meeting of
The American Physical Society

Identification and Analysis of Atomic and Molecular Superposition Spectra Following Laser-Induced Optical Breakdown ALEXANDER C. WOODS, CHRISTIAN G. PARIGGER, Center for Laser Applications, University of Tennessee Space Institute — Molecular recombination and excitation of atoms following laser-induced optical breakdown provide means for simultaneous detection of atomic and molecular species. Atomic emission spectra may be analyzed to infer electron number and temperature. Careful analysis of select atomic spectra may reveal superposed diatomic molecular spectra. Nonlinear fitting of synthetic molecular spectra, calculated via diatomic quantum theory, provides tools for identification, temperature measurement, and further analyses of the diatomic molecules present. This presentation investigates the presence of C₂ molecular Swan bands in Balmer Series atomic hydrogen spectra. Combustion plumes are also studied, including comparisons of temperatures obtained using a two-color pyrometer and from data reduction analysis of measured spectroscopic AIO data.

Alexander C. Woods
Center for Laser Applications, University of Tennessee Space Institute

Date submitted: 25 Aug 2011

Electronic form version 1.4