

Abstract Submitted
for the OSF08 Meeting of
The American Physical Society

Combustion Diagnostics with Terahertz Tomography NICHOLAS SCHROEDER, FIN EICHORN, JASON DEIBEL, Wright State University — The objective of this project is to capture the spectroscopic signature and temperature of combustion process as a function of position using terahertz (THz) time-domain spectroscopy and imaging. The development of a system that can monitor the temperature of an exhaust plume and its chemical make-up as a function of position would be of immeasurable value to the further development of jet engines and their mid-life diagnostics. Current techniques available require different set-ups for each measurement, position and chemical. Our approach to tomographic reconstruction consists of utilizing 8 separate THz transmitter- receiver pairs arranged around the object, allowing all of the tomographic slices to be taken at the same instant. We will present preliminary data demonstrating THz tomographic imaging of solid objects and calibration of spectroscopic and thermal measurement capabilities by THz characterization of water vapors and flames. We will further show ongoing work to produce a THz tomographic reconstruction of a simple flame.

Jason Deibel
Wright State University

Date submitted: 18 Sep 2008

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