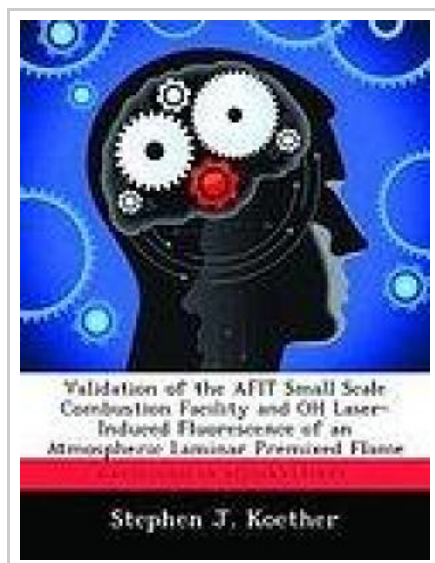




Validation of the AFIT Small Scale Combustion Facility and OH Laser-Induced Fluorescence of an Atmospheric Laminar Premixed Flame

By Stephen J. Koether

Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x6 mm. This item is printed on demand - Print on Demand Neuware - Construction in the AFIT combustion facility is complete and the objective of this report is to explain the steps taken to make the laboratory operational. The infinite radius Ultra-Compact Combustor (UCC) sectional model has been delivered and is fully installed with all fuel, air and instrument lines. Every major system in the lab has been tested and is functioning properly. Laboratory operating procedure has been established to ensure both safety and continuity in experimental results. Finally, the lab has been certified through official safety channels and combustion experiments are underway. The unique capability of the AFIT combustion laboratory is the laser diagnostic system. The laser system has been configured for OH Laser-Induced Fluorescence (LIF) and initial experiments were performed on a premixed, laminar flame produced by a Hencken burner. The LIF methods accurately measured the OH concentration and temperature of the flame as compared to theoretical equilibrium flame data with an overall system uncertainty of approximately 2.5%. Therefore, the laser system has been calibrated and is ready for future use. 100 pp. Englisch.



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