

MICHAEL S. KLASSEN, P.E., PH.D.

EDUCATION

Ph.D., Mechanical Engineering, University of Maryland, 1992.

M.S., Mechanical Engineering, University of Maryland, 1990.

B.S., Mechanical Engineering, University of Maryland, 1987.

PROFESSIONAL EXPERIENCE

Vice President & Principal Research Engineer, Combustion Science & Engineering 1998 to present
Columbia, MD

- Responsible for the design and execution of experimental and analytical projects in fire and combustion research.
- Developed analytical technique for prediction of flameholding potential in gas turbine combustors.
- Developed reduced chemical kinetic schemes for prediction of heat release and pollutant formation in gas turbine combustors.
- Developed analytical techniques for prediction of radiative loading in gas turbines for enhanced lifeing predictions of liners.
- Conducted small-scale experimental study to measure radiative loading of combustor walls to provide validation data for analytical study.
- Conducted small-, medium- and large-scale testing on the transmission of radiation and breakage properties of glazing materials.
- Provide engineering support for litigation cases. Conduct fire and hazard investigations.

Staff Engineer, Hughes Associates, Inc. 1996 - 1997
Baltimore, MD

- Designed and conducted experimental fire and combustion research. Involved in the testing and modeling of fire-suppression systems.

Visiting Asst. Professor/Postdoctoral Researcher, Purdue University 1992 to 1996

- Developed laser and optical diagnostic techniques for use in combustion applications. Utilized these techniques to investigate the formation of minor combustion species and pollutants in laminar and turbulent flames.
- Conducted experiments into the effect of pressure on nitric oxide (NO) formation in flames at pressures ranging from 1 to 15 atm. Local NO concentration measurements were made in laminar flames using laser-induced fluorescence (LIF) and used to evaluate the ability of current chemical kinetic mechanisms to predict NO formation in high-pressure flames. Instantaneous, local NO concentrations were also measured in premixed, turbulent jet flames which gave insights into the regions of NO formation in this type of flame and provided data for model validation.
- Further research involved the use of picosecond time-resolved laser-induced fluorescence (PITLIF) to determine the instantaneous, quantitative concentration of minor species in turbulent flames. This study involved the application of ultra-fast spectroscopic techniques (resolution on the order of nanoseconds) in order to make time-series measurements of minor species concentrations in turbulent reacting flows.

- Lectured on introductory engineering thermodynamics.

Graduate Research Assistant, University of Maryland 1989 - 1992

- Research involved the study of radiation properties and the flame structure of liquid-fuel pool flames. This work included measurements of the total radiative output, fuel burning rate and flame height for a variety of burner diameters (5 cm- 1 m). A new technique to measure radiative heat transfer from the flame to the fuel surface was developed. Instantaneous and simultaneous measurements of temperature, intensity and soot volume fraction were made using an optical pyrometric technique. Stochastic simulations using the measured instantaneous flame properties were employed for predictions of radiative output from the flame and the fuel burning rate.

Guest Researcher, National Institute of Standards and Technology 1989 - 1992

Center for Building and Fire Research

Guest Researcher, Fire Research Institute, Department of Home Ministry 1991

Tokyo, Japan

Graduate Research Assistant, University of Maryland 1988-1989

- Conducted research which investigated the transient cooling of hot surfaces by dropwise evaporation for use in fire suppression models. An infrared thermographic technique was developed to monitor the response of a heated low-conductivity surface to an impinging water droplet. Digital image processing techniques were utilized to extract the extent of cooling of the surface by the droplet and the transient surface temperature from the infrared data.

PROFESSIONAL REGISTRATIONS

- **Registered Professional Engineer**, Mechanical Engineering, License Number 23107 (Maryland).

PROFESSIONAL STANDING

- Member, The American Society of Mechanical Engineers
- Member, The Combustion Institute
- Member, AIAA
- Member, Combustion and Fuels Committee, International Gas Turbine Institute