

**Chih-Jen Sung**  
**Department of Mechanical and Aerospace Engineering**  
**Case Western Reserve University**  
**10900 Euclid Avenue, Cleveland, OH 44106**  
**Phone: (216) 368-2942; FAX: (216) 368-6445; e-mail: [cjs15@case.edu](mailto:cjs15@case.edu)**



### **Brief Biography**

Dr. Chih-Jen Sung is a Full Professor in the Department of Mechanical and Aerospace Engineering at Case Western Reserve University. His research and teaching interests have included structure of chemically reacting flow, catalytic combustion, micro-propulsion, laser diagnostics, supersonic combustion, unsteady and high-pressure flame phenomena, soot and NO<sub>x</sub> formation, flame extinction and ignition, and development of detailed and reduced chemical kinetic models for aliphatic fuels combustion. He is an Associate Fellow and a member of the Propellants and Combustion Technical Committee of the AIAA. He received the 1998 Best Paper Award from the 12th Microgravity Science and Space Processing Symposium at the 36th AIAA Aerospace Science Meeting, the National Science Foundation early CAREER development award in 2002, the 2004 and 2006 Northern Ohio AIAA Best Paper Awards, and the Distinguished Paper Award in Colloquium Laminar Flames from the 31st International Symposium on Combustion in 2007. He is author or co-author of over 80 archival publications in combustion and propulsion.

### **Relevant Experience and Interests**

Dr. Chih-Jen Sung has considerable research experience in and contributions to the study on flame dynamics and chemistry. Currently he is actively involved in research on flame structure studies, supersonic combustion, pollutant formation in flames, surrogate fuels, reduced chemistry, and radiation in flames. He is also in close contact with other researchers active in the development of detailed and reduced reaction mechanisms for hydrogen, carbon monoxide, and hydrocarbon fuels.

### **Five Publications Relevant to the Present Subject Area**

1. K. Kumar, J.E. Freeh, C.J. Sung, and Y. Huang (2007). "Laminar Flame Speeds of Preheated *iso*-Octane/O<sub>2</sub>/N<sub>2</sub> and *n*-Heptane/O<sub>2</sub>/N<sub>2</sub> Mixtures," *J. Prop. Power* 23, 428-436.
2. G. Mittal and C.J. Sung (2007). "A Rapid Compression Machine for Chemical Kinetics Studies at Elevated Pressures and Temperatures," *Combust. Sci. Tech.* 179, 497-530.
3. G. Mittal, C.J. Sung, and R.A. Yetter (2006). "Autoignition of H<sub>2</sub>/CO at Elevated Pressures in a Rapid Compression Machine," *Int. J. Chem. Kinet.* 38, 516-529.
4. G. Mittal and C.J. Sung (2006). "Aerodynamics inside a Rapid Compression Machine," *Combust. Flame* 145, 160-180.
5. Y. Huang, C.J. Sung, and J.A. Eng (2004). "Laminar Flame Speeds of Primary Reference Fuels and Reformer Gas Mixtures," *Combust. Flame* 139, 239-251.

### **Other Selected Publications**

1. K. Kumar and C.J. Sung (2007). "Laminar Flame Speeds and Extinction Limits of Preheated *n*-Decane/O<sub>2</sub>/N<sub>2</sub> and *n*-Dodecane/O<sub>2</sub>/N<sub>2</sub> Mixtures," *Combust. Flame* 151, 209-224.
2. G. Mittal, C. J. Sung, M. Fairweather, A.S. Tomlin, J.F. Griffiths, and K.J. Hughes (2007). "Significance of the HO<sub>2</sub>+CO Reaction during the Combustion of CO+H<sub>2</sub> Mixtures at High Pressures," *Proc. Combust. Inst.* 31, 419-427.
3. G. Mittal and C.J. Sung (2006). "Autoignition of Toluene and Benzene at Elevated Pressures in a Rapid Compression Machine," submitted.
4. A.F. Ibarreta and C.J. Sung (2006). "Optimization of Jet-A Fuel Reforming for Aerospace Applications," *Int. J. Hydrogen Energ.* 31, 1066-1078.
5. T. Hirasawa, C.J. Sung, Z. Yang, A. Joshi, H. Wang, and C.K. Law (2002). "Determination of Laminar Flame Speeds of Fuel Blends Using Digital Particle Image Velocimetry: Ethylene, *n*-Butane, and Toluene Flames," *Proc. Combust. Inst.* 29, 1427-1434.

