

Robert S. Tranter

Argonne National Laboratory
Chemical Sciences and Engineering Division
9700 South Cass Avenue, Building 200
Argonne, IL 60439-4837
phone: 630/252-6505, fax: 630/252-9292
e-mail: tranter@anl.gov

Professional Experience

- **2/2004- present.** Chemist, Chemistry Division, Argonne National Laboratory.
- **2002-2004.** Research Assistant Professor, Departments of Chemical Engineering and Mechanical and Industrial Engineering, University of Illinois at Chicago.
- **1999-2002.** Lecturer and Visiting Research Specialist in Chemistry, Department of Chemical Engineering, University of Illinois at Chicago.
- **1997-1999.** Postdoctoral Research Associate, Department of Chemical Engineering, University of Illinois at Chicago.
- **1994-1997.** Postdoctoral Research Associate, Deutsch Forschungsanstalt fuer Luft und Raumfahrt (DLR), Stuttgart, Germany.

Education

- Ph.D., Combustion Chemistry, University of Hull, East Yorkshire, England, 1994. (Advisor: R. W. Walker)
- B.S., Chemistry, University of Hull, East Yorkshire, England, 1991.

Career Activities & Highlights

- Areas of Research and Expertise
 - Experimental studies to elucidate kinetic and mechanistic parameters for gas phase reactions important in combustion and pollutant formation mechanisms, e.g., formation and destruction of the first aromatic ring in PAH and soot formation mechanisms; role of resonance stabilized radicals in inhibiting autoignition; and oxidation and pyrolysis of aromatic species and their precursors. Experimental methods include shock tubes, flow reactors and static reactors with a variety of analytical methods such as gas chromatography and mass spectrometry. Various methods that greatly extend the experimental range of traditional techniques have been developed, e.g., high pressure single pulse shock tube at UIC; diaphragmless shock tube

with real time TOF-MS analysis; and high temperature, wide pressure, fast flow reactor.

- Professional Organizations
 - Member of the Royal Society of Chemistry
 - Chartered Chemist, Royal Society of Chemistry
 - Chartered Scientist, Science Council, United Kingdom
 - Member of the Combustion Institute

Publications

H. Xu, J. H. Kiefer, R. Sivaramakrishnan, R. S. Tranter, and B. R. Giri, "Shock Tube Study of Dissociation and Relaxation in 1,1-difluoroethane and Vinyl Fluoride," *Physical Chemistry Chemical Physics*, 9 (31), 4164-4176 (2007).

S. Saxena, J. H. Kiefer, and R. S. Tranter, "Relaxation, Incubation, and Dissociation in CO₂," *The Journal of Physical Chemistry*, A 111 (19), 3884-3890 (2007).

B. R. Giri and R. S. Tranter, "Dissociation of 1,1,1-trifluoroethane Behind Reflected Shock Waves: Shock Tube/Time-of-Flight Mass Spectrometry Experiments," *The Journal of Physical Chemistry*, A 111 (19), 1585-1592 (2007).

B. R. Giri, J. H. Kiefer, and R. S. Tranter, "Shock Tube Time-of-Flight Mass Spectrometer for High Temperature Kinetic Studies," *Review of Scientific Instruments*, 78 (3), 034101-1 / 034101-11 (2007).

K. S. Gupte, J. H. Kiefer, R. S. Tranter, S. J. Klippenstein, and L. B. Harding, "Decomposition of Acetaldehyde: Experiment and Detailed Theory," *Proceedings of the Combustion Institute*, 31 (1), 167-174 (2007).

R. Sivaramakrishnan, A. Comandini, R. S. Tranter, K. Brezinsky, S. G. Davis, and H. Wang, "Combustion of CO/H₂ Mixtures at Elevated Pressures," *Proceedings of the Combustion Institute*, 31 (1), 429-437 (2007).

R. Sivaramakrishnan, R. S. Tranter, and K. Brezinsky, "High Pressure Pyrolysis of Toluene. 1. Experiments and Modeling of Toluene Decomposition," *The Journal of Physical Chemistry*, A 110 (30), 9388-9399 (2006).

R. Sivaramakrishnan, R. S. Tranter, and K. Brezinsky, "High Pressure Pyrolysis of Toluene. 2. Modeling Benzyl Decomposition and Formation of Soot Precursors," *The Journal of Physical Chemistry*, A 110 (30), 9400-9404 (2006).

C. H. Miller, W. Tang, R. S. Tranter, and K. Brezinsky, "Shock Tube Pyrolysis of 1,2,4,5-Hexatetiene," *The Journal of Physical Chemistry*, A 110 (10), 3605-3613 (2006).

R. S. Tranter, J. H. Kiefer, S. Santhanam, N. K. Srinivasan, S. J. Klippenstein, and M. A. Oehlschlaeger, "Dissociation, Relaxation, and Incubation in the High-Temperature Pyrolysis of Ethane, along with a Successful RRKM Modeling," *Proceedings of the Combustion Institute*, 30, 1129-1135 (2005).

W. Tang, R. S. Tranter, and K. Brezinsky, "Isomeric Product Distributions of the Recombination of Propargyl Radicals," *The Journal of Physical Chemistry, A* 109 (27), 6056-6065 (2005).