

Joe V. Michael

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Professional Experience

- **1992-present.** Senior Chemist, Chemical Sciences and Engineering Division, Argonne National Laboratory.
- **1987-1992.** Chemist, Chemistry Division, Argonne National Laboratory.
- **1982-1987.** Chemist, Brookhaven National Laboratory, Upton, New York.
- **1978-1982.** Visiting Professor, Catholic University of America, Washington, D.C.
- **1975-1978.** NRC Senior Research Associate, NASA/Goddard Space Flight Center, Greenbelt, Maryland.
- **1970-1975.** Associate Professor of Chemistry, Carnegie-Mellon University, Pittsburgh, Pennsylvania.
- **1965-1970.** Assistant Professor of Chemistry, Carnegie-Mellon University, Pittsburgh, Pennsylvania.
- **1964-1965.** Research Associate, Brookhaven National Laboratory, Upton, New York. (Sponsor: Ralph E. Weston, Jr.)
- **1962-1964.** Research Associate, Harvard University, Cambridge, Massachusetts. (Sponsor: George B. Kistiakowsky).

Education

- Ph.D., Physical Chemistry, University of Rochester, 1963. (Advisor: W. Albert Noyes, Jr.)
- B. A., Chemistry and Mathematics, Wabash College, 1957.

Awards

- Fellow, American Association for the Advancement of Science (2008)
- Argonne National Laboratory Director's Award (2004)
- Argonne National Laboratory Pacesetter Award (2003)

Career Activities & Highlights

- Areas of Research and Expertise
 - Absolute thermal rate constants are measured in order to support theoretical chemical kinetics and practical disciplines, such as atmospheric chemistry or the chemistry of combustion, using a variety of techniques including discharge flow tube and flash or laser photolysis methods with resonance absorption and/or fluorescence

spectrometric detection. When appropriate, laser induced fluorescence has also been used to detect reacting species. During the last 22 years, absorption methods have been applied to high temperature chemistry, and absolute values of thermal rate constants can now be directly determined by using the shock tube technique.

- Professional Organizations
 - American Chemical Society
 - Sigma Xi
 - New York Academy of Sciences
 - American Association for the Advancement of Science
 - Combustion Institute
 - American Geophysical Union
- Professional Activities
 - Papers Review Committee, Combustion Institute, International Symposia (1984, 1986, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004)
 - Editorial Advisory Board, International Journal of Chemical Kinetics (1997-1999)
 - Panel Reviewer for the DOE University Research Instrumentation Program (1984 and 1990)
 - Program Reviewer for the DOE Review of the Combustion Chemistry Program at the Sandia National Laboratory, Livermore, California
 - Panel Member for CRF Phase II Project at the Sandia National Laboratory, Livermore, California
- Outside Collaborations
 - Lifshitz (Hebrew University)
 - J. M. Bowman (Emory University)
 - A. Fontijn (Rensselaer Polytechnic Institute)
 - J. H. Kiefer (University of Illinois, Chicago)
 - D. A. Dixon (Pacific Northwest National Laboratory)
 - K. Raghavachari (Indiana University)
 - G. P. Glass (Rice University)
 - S. L. Mielke (Pacific Northwest National Laboratory)
 - K. A. Peterson (Washington State University)
 - D. W. Schwenke (NASA Ames Research Center)
 - B. C. Garrett (Pacific Northwest National Laboratory)
 - D. G. Truhlar (University of Minnesota)
 - L. N. Krasnoperov (New Jersey Institute of Technology)
 - M.-C. Su (Sonoma State University)
 - J. W. Sutherland (Brookhaven National Laboratory)
- Postdoctoral Fellows
 - J. R. Fisher (Pennsylvania State University)
 - K. S. Shin (University of Texas)
 - K. P. Lim (Pennsylvania State University)
 - S. S. Kumaran (University of Illinois, Chicago)
 - J. Hranisavljevic (Rensselaer Polytechnic Institute)

- N. K. Srinivasan (University of Illinois, Chicago)
- R. Sivaramakrishnan (University of Illinois, Chicago)

Publications

R. Sivaramakrishnan and J. V. Michael, "Shock Tube Measurements of High Temperature Rate Constants for OH with Cyclo-alkanes and Methyl-cycloalkanes," *Combustion and Flame*, ASAP Article, doi:10.1016/J.COMBUSTFLAME.2008.10.010

R. Sivaramakrishnan, N. K. Srinivasan, M.-C. Su, and J. V. Michael, "High Temperature Rate Constants for OH + Alkanes," *Proceedings of the Combustion Institute*, 32, 107-114 (2009).

N. K. Srinivasan, M.-C. Su, J. V. Michael, A. W. Jasper. S. J. Klippenstein, and L. B. Harding, "The Thermal Decomposition of CF₃ and the Reaction of CF₂ + OH → CF₂O + H," *The Journal of Physical Chemistry, A* 112, 31-37 (2008).

N. K. Srinivasan, M.-C. Su, and J. V. Michael, "CH₃ + O₂ → H₂CO + OH Revisited," *The Journal of Physical Chemistry, A* 111, 11589-11591 (2007).

N. K. Srinivasan, M.-C. Su, and J. V. Michael, "Reflected Shock Tube Studies of High-Temperature Rate Constants for OH + C₂H₂ and OH + C₂H₄," *Physical Chemistry Chemical Physics*, 9 (31), 4155-4163 (2007).

N. K. Srinivasan, M.-C. Su, J. V. Michael, S. J. Klippenstein, and L. B. Harding, "Reflected Shock Tube and Theoretical Studies of High-Temperature Rate Constants for OH + CF₃H ⇌ CF₃ + H₂O AND CF₃ + OH → Products," *The Journal of Physical Chemistry, A* 111 (29), 6822-6831 (2007).

N. K. Srinivasan, M.-C. Su, and J. V. Michael, "High-Temperature Rate Constants for CH₃OH + Kr → PRODUCTS, OH + CH₃OH → PRODUCTS, OH + (CH₃)₂CO → CH₂COCH₃ + H₂O, AND OH + CH₃ → CH₂ + H₂O," *The Journal of Physical Chemistry, A* 111 (19), 3951-3958 (2007).

N. K. Srinivasan, J. V. Michael, L. B. Harding, and S. J. Klippenstein, "Experimental and Theoretical Rate Constants for CH₄ + O₂ → CH₃ + HO₂," *Combustion and Flame*, 149 (1-2), 104-111 (2007).

N. K. Srinivasan, M.-C. Su, J. W. Sutherland, J. V. Michael, and B. Ruscic, "Reflected Shock Tube Studies of High-Temperature Rate Constants for OH + NO₂ → HO₂ + NO and OH + HO₂ → H₂O + O₂," *The Journal of Physical Chemistry, A* 110 (21), 6602-6607 (2006).