Stanford



Tom Bowman

Professor of Mechanical Engineering, Emeritus

CONTACT INFORMATION

- **Administrative Contact**

  Mary Hanrahan - Thermosciences Group Administrator

  Email frog@stanford.edu

  Tel (650) 725-2012

Bio

BIO

Professor Bowman studies reacting flows, primarily through experimental means, and the processes by which pollutants are formed and destroyed in flames. In addition, he is interested in the environmental impact of energy use, specifically greenhouse gas emissions from use of fossil fuels.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Mechanical Engineering

HONORS AND AWARDS

- Research Prize, Humboldt (1997)
- Zeldovich Gold Medal, Combustion Institute (1998)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, National Academy of Engineering (2013 - present)

PROFESSIONAL EDUCATION

- PhD, Princeton , Aerospace and Mechanical Sciences (1966)

Publications

PUBLICATIONS

- **Professor Irvin Glassman** *COMBUSTION SCIENCE AND TECHNOLOGY*
  Bowman, C. T., Dryer, F. L.
  2021; 193 (4): 539–40
- **Impact of vitiation on flow reactor studies of jet fuel combustion chemistry** *COMBUSTION AND FLAME*
  Wang, K., Xu, R., Bowman, C. T., Wang, H.
  2021; 224: 66–72
- **Professor Irvin Glassman (1923-2019) IN MEMORIAM** *COMBUSTION AND FLAME*
  Bowman, C. T., Dryer, F. L.

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- **A physics-based approach to modeling real-fuel combustion chemistry - V. NOx formation from a typical Jet A** *COMBUSTION AND FLAME*
  Saggese, C., Wan, K., Xu, R., Tao, Y., Bowman, C. T., Park, J., Lu, T., Wang, H.
  2020; 212: 270–78
- **Kinetic analysis of distinct product generation in oxidative pyrolysis of four octane isomers** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Wang, K., Bowman, C. T., Wang, H.
  2019; 37 (1): 531–38
- **A Physics-based approach to modeling real-fuel combustion chemistry - III. Reaction kinetic model of JP10** *COMBUSTION AND FLAME*
  Tao, Y., Xu, R., Wang, K., Shao, J., Johnson, S. E., Movaghar, A., Han, X., Park, J., Lu, T., Brezinsky, K., Egolfopoulos, F. N., Davidson, D. F., Hanson, et al
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- **A physics based approach to modeling real-fuel combustion chemistry - IV. HyChem modeling of combustion kinetics of a bio-derived jet fuel and its blends with a conventional Jet A** *COMBUSTION AND FLAME*
  Wang, K., Xu, R., Parise, T., Shao, J., Movaghar, A., Lee, D., Park, J., Gao, Y., Lu, T., Egolfopoulos, F. N., Davidson, D. F., Hanson, R. K., Bowman, et al
  2018; 198: 477–89
- **A physics-based approach to modeling real-fuel combustion chemistry - II. Reaction kinetic models of jet and rocket fuels** *COMBUSTION AND FLAME*
  Xu, R., Wang, K., Banerjee, S., Shao, J., Parise, T., Zhu, Y., Wang, S., Movaghar, A., Lee, D., Zhao, R., Han, X., Gao, Y., Lu, et al
  2018; 193: 520–37
- **A physics-based approach to modeling real-fuel combustion chemistry - I. Evidence from experiments, and thermodynamic, chemical kinetic and statistical considerations** *COMBUSTION AND FLAME*
  Wang, H., Xu, R., Wang, K., Bowman, C. T., Hanson, R. K., Davidson, D. F., Brezinsky, K., Egolfopoulos, F. N.
  2018; 193: 502–19
- **An experimental and kinetic modeling study of n-dodecane pyrolysis and oxidation** *COMBUSTION AND FLAME*
  Banerjee, S., Tangko, R., Sheen, D. A., Wang, H., Bowman, C. T.
  2016; 163: 12-30
- **Shock Tube Measurements of the Rate Constant for the Reaction Ethanol + OH.** *journal of physical chemistry. A*
  Stranic, I., Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
  2014; 118 (5): 822-828
- **Shock Tube Measurements of the Rate Constant for the Reaction Ethanol plus OH** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Stranic, I., Pang, G. A., Hanson, R. K., Golden, D. M., Bowmant, C. T.
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- **Shock Tube Measurements of the tert-Butanol + OH Reaction Rate and the tert-C4H8OH Radical ß-Scission Branching Ratio Using Isotopic Labeling.** *journal of physical chemistry. A*
  Stranic, I., Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
  2013; 117 (23): 4777-4784
- **CFD simulation of a confined axisymmetric laminar methane-air diffusion flame** *8th Mediterranean Combustion Symposium*
  Fletcher, D. F., Bowman, C. T., Haynes, B. S.
  2013
- **Experimental Determination of the High-Temperature Rate Constant for the Reaction of OH with sec-Butanol** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
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- **High-Temperature Rate Constant Determination for the Reaction of OH with iso-Butanol** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
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  Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
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- **High-Temperature Measurements of the Rate Constants for Reactions of OH with a Series of Large Normal Alkanes: n-Pentane, n-Heptane, and n-Nonane** *ZEITSCHRIFT FUR PHYSIKALISCHE CHEMIE-INTERNATIONAL JOURNAL OF RESEARCH IN PHYSICAL CHEMISTRY & CHEMICAL PHYSICS*
  Pang, G. A., Hanson, R. K., Golden, D. M., Bowman, C. T.
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- **Vitiated ethane oxidation in a high-pressure flow reactor** *COMBUSTION AND FLAME*
  Walters, K. M., Bowman, C. T.
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- **High-temperature shock tube study of the reactions CH3+OH -> products and CH3OH+Ar -> products** *INTERNATIONAL JOURNAL OF CHEMICAL KINETICS*
  Vasudevan, V., Cook, R. D., Hanson, R. K., Bowman, C. T., Golden, D. M.
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- **Shock tube study of the reaction of CH with N-2: Overall rate and branching ratio** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Vasudevan, V., Hanson, R. K., Bowman, C. T., Golden, D. M., Davidson, D. F.
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- **Effects of pressure on performance of mesoscale burner arrays for gas-turbine applications** *JOURNAL OF PROPULSION AND POWER*
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- **High-temperature shock tube measurements of methyl radical decomposition** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Vasudevan, V., Hanson, R. K., Golden, D. M., Bowman, C. T., Davidson, D. F.
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- **High-temperature measurements of the rates of the reactions CH2O+Ar -> Products and CH2O+O-2 -> Products** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Vasudevan, V., Davidson, D. F., Hanson, R. K., Bowman, C. T., Golden, D. M.
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- **Mesoscale burner Arrays for gas-turbine reheat applications** *JOURNAL OF PROPULSION AND POWER*
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  Song, S. H., Golden, D. M., Hanson, R. K., Bowman, C. T., Senosiain, J. P., Musgrave, C. B., Friedrichs, G.
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- **A shock tube study of the product branching ratio of the NH2+NO reaction at high temperatures** *JOURNAL OF PHYSICAL CHEMISTRY A*
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- **A shock tube study of the NH2+NO2 reaction** *29th International Combustion Symposium*
  Song, S., GOLDEN, D. M., Hanson, R. K., Bowman, C. T.
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  Schmidt, C. C., Bowman, C. T.
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- **Experimental study and modeling of the reaction H+O-2+M -> HO2+M (M = Ar, N-2, H2O) at elevated pressures and temperatures between 1050 and 1250 K** *International Discussion Meeting of the Deutsche-Bunsen-Gesellschaft-fur-Physikalische-Chemie*
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- **A shock tube study of the product branching ratio for the reaction NH2+NO using frequency-modulation detection of NH2** *JOURNAL OF PHYSICAL CHEMISTRY A*
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