

Enoch E. Dames

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Los Angeles, CA 90007
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Education:

Doctoral Student
University of Southern California

Aerospace and Mechanical Engineering
Ph.D. Advisor: Hai Wang

B.S.
Virginia Tech

2006 Engineering Science and Mechanics (Honors)

B.A.
Virginia Tech

2006 Chemistry (Honors)

General Research Interests:

Combustion kinetics and model development, unimolecular gas-phase reaction rate theory, RRKM/master equation modeling, persistent free radicals, atmospheric chemistry, topics relating to physical chemistry

Work Experience:

Graduate Research Assistant, University of Southern California, 2006-present

Researcher, Biogeochemistry of Earth Processes Lab, Virginia Tech, 2006

Intern, Thermal Systems Lab, General Electric Global Research, 2005

Lab Technician, Applied Biosciences Center, Virginia Tech, 2004-2005

Intern, Tissue Engineering Lab, NIH, 2004

Engineering Aid, The Boeing Company, 2003

Intern, Biophysics Lab, NIH, 2002

Peer Reviewed Journal Articles:

C. Ji, **E. Dames**, B. Sirjean, H. Wang, F. N. Egolfopoulos, "An Experimental and Modeling Study of the Propagation of Cyclohexane and Mono-alkylated Cyclohexane Flames," *Proc. Combust. Inst.*, submitted.

C. Taatjes, D. Osborn, T. M. Selby, G. Meloni, A. J. Trevitt, E. Epifanovsky, A. I. Krylov, B. Sirjean, **E. Dames**, H. Wang, "Products of the Benzene + O(³P) Reaction," *J. Phys. Chem. A* (2010) in press.

E. Dames, B. Sirjean, H. Wang, "Weakly Bound Carbon-Carbon Bonds in Acenaphthene Derivatives and Hexaphenylethane," *J. Phys. Chem. A* 114 (2010) 1161-1168.

C. Ji, **E. Dames**, Y. L. Wang, H. Wang, F. N. Egolfopoulos, "Propagation and extinction of premixed C-5-C-12 n-alkane flames," *Combust. Flame* 157 (2010) 277-287.

A. T. Holley, X. You, **E. Dames**, H. Wang, F. N. Egolfopoulos, "Sensitivity of propagation and extinction of large hydrocarbon flames to fuel diffusion," *Proc. Combust. Inst.* 32 (2009) 1157-1163.

Online Publications:

B. Sirjean, **E. Dames**, D. A. Sheen, F. N. Egolfopoulos, H. Wang, D. F. Davidson, R. K. Hanson, H. Pitsch, C. T. Bowman, C. K. Law, W. Tsang, N. P. Cernansky, D. L. Miller, A. Violi, R. P. Lindstedt, "A high-temperature chemical kinetic model of n-alkane, cyclohexane, and methyl-, ethyl-, n-propyl and n-butyl-cyclohexane oxidation at high temperatures, JetSurF version 1.1," September 15, 2009

(<http://melchior.usc.edu/JetSurF/ JetSurF1.1/Index.html>).

B. Sirjean, **E. Dames**, D. A. Sheen, X.-Q. You, C. Sung, A. T. Holley, F. N. Egolfopoulos, H. Wang, S. S. Vasu, D. F. Davidson, R. K. Hanson, H. Pitsch, C. T. Bowman, A. Kelley, C. K. Law, W. Tsang, N. P. Cernansky, D. L. Miller, A. Violi, R. P. Lindstedt, "A high-temperature chemical kinetic model of n-alkane oxidation, JetSurF version 1.0," September 15, 2009

(<http://melchior.usc.edu/JetSurF/JetSurF1.0/Index.html>).

B. Sirjean, **E. Dames**, D. A. Sheen, X.-Q. You, C. Sung, A. T. Holley, F. N. Egolfopoulos, H. Wang, S. S. Vasu, D. F. Davidson, R. K. Hanson, H. Pitsch, C. T. Bowman, A. Kelley, C. K. Law, W. Tsang, N. P. Cernansky, D. L. Miller, A. Violi, R. P. Lindstedt, "A high-temperature chemical kinetic model of n-alkane oxidation, JetSurF version 0.2," September 08, 2008

(http://melchior.usc.edu/JetSurF/Version0_2/Index.html).

Other Publications:

E. Dames, "Modified Oddo and Tomson Scaling Index (MOTSI) for Applications at High Temperature and Pressure," *General Electric Technical Report*, 2006.

Conference Proceedings & Presentations:

E. Dames, H. Wang, "Kinetic Modeling of One-Ring Aromatic Compounds," Paper #10S-62, 2010 Spring Technical Meeting of the Western States of the Combustion Institute, March 2010.

E. Dames, B. Sirjean, H. Wang, "Weakly Bound Carbon-Carbon Bonds in Acenaphthene Derivatives and Hexaphenylethane," Paper #09F-33, 2009 Fall Technical Meeting of the Western States of the Combustion Institute, October 2009

H. Wang, **E. Dames**, X. You, F. N. Egolfopoulos, G. P. Smith, Z. Djuricic, M. Frenklach "PrIME: Data Model for Laminar Premixed Flames," Work in Progress Poster, 32nd International Combustion Symposium, 2009.

C. Taatjes, D. Osborn, T. M. Selby, G. Meloni, A. J. Trevitt, A. I. Krylov, B. Sirjean, **E. Dames**, H. Wang "Products of the Benzene + O(³P) Reaction," Work in Progress Poster, 32nd International Combustion Symposium, 2009.

B. Sirjean, **E. Dames**, D.A. Sheen, H. Wang, "Simplified chemical kinetic models for high-temperature oxidation of C₁ to C₁₂ hydrocarbons," Paper #23F1, 6th Joint Meeting of the U.S. Sections of the Combustion Institute, May 2009.

E. Dames, "Fractal Dimensioning and Shape Factor Analysis of Human MRI Brain Tumor Images – The Potential for Tumor Staging Without an M.D.," Proceedings of the 4th Annual Virginia Tech/Wake Forest School of Biomedical Engineering and Sciences Student Research Conference, Meadows of Dan, VA, 2005

E. Dames C. Kuo, R. Tuan, "Growth Factor-Induced Gene Expression of Human Adult Ligament Cells *in vitro*," NIH/NIAMS Cartilage Biology and Orthopedics Branch, Summer 2004

E. Dames, R. Nossal, "Size Distribution Studies of *Salmonella typhi* and *Salmonella paratyphi A* Conjugate Vaccine Components via Dynamic Light Scattering and Gel Electrophoresis," NIH/NICHD, LIMB, Summer 2002

Academic Experience & Development:

Reviewer: Combustion and Flame (2)

Session Chair: Reaction Kinetics, 2009 Fall Technical Meeting of the Western States of the Combustion Institute, October 2009

Contributing Team Member: PRiME - Process Informatics Model Team (www.primekinetics.org)

Editor in chief, The Engineers' Forum Magazine, Virginia Tech, 2005-2006

Research and Experience:

August 2006 - University of Southern California

Present Graduate Research Assistant Los Angeles, CA

- Modeling of combustion phenomena: chemical kinetics and molecular transport, supervised by Professor Hai Wang
- Kinetic model development: *JetSurF*, one-ring aromatics
- Unimolecular reaction rate theory
- *Ab initio* investigations of aromatic radicals as an explanation for soot reactivity and contrail formation

Jan 2006 - Virginia Tech

August 2006 Undergraduate Researcher Blacksburg, VA

- Researcher, Biogeochemistry of Earth Processes Lab, Geos. Dept., supervised by Professor Patricia Dove
- Applied atomic force microscopy towards the development of a thermodynamic-based theory for amorphous silica dissolution and calcite growth

Fall 2005 General Electric Global Research Intern

Niskayuna, NY

- Worked in a thermal systems laboratory contributing towards the development of the GENx jet engine
- Modified an existing calcium carbonate scaling index for applications at high temperatures and pressures
- Authored a General Electric Technical Report
- Applied finite element modeling techniques towards thermal stress investigations in jet engine turbine blades

Fall, 2004 - Virginia Tech Applied Biosciences Center

Summer 2005 Lab Technician

Blacksburg, VA

- Used Raman and fluorescence spectroscopy to detect cancer in serum
- Analyzed spectra to quantitatively distinguish between healthy and cancerous samples
- Utilized measures of complexity to stage human MRI brain tumor images

Summer, 2004 National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH
Lab Technician

Bethesda, MD

- Conducted and assisted with research in the Tissue Engineering Section of the Cartilage Biology and Orthopedics Branch, under Dr. Rocky Tuan
- Studied the gene expression of various growth factor-induced adult human stem and ligament cell cultures
- Cell line maintenance, RNA Isolation, RT-PCR, Immunohistochemistry
- Assisted in the development of ionically crosslinked hydrogels as scaffolds for tissue engineering

Summer, 2003 The Boeing Company, through Kilakila Employment Service
Engineering Aid

Maui, HI

- Supported R+D Optical Department functions at U.S. Air Force DoD Space Surveillance Site
- Applied Interferometry and Spectrophotometry to characterize mirrors and optical lenses
- Aligned optical mirrors using an autocollimator and theodolite, after calibration
- Conducted laser power characterization tests for on-site Alignment Lasers, completed Laser safety training

Summer, 2002 National Institute of Child Health and Human Development, NIH
Student Intramural Research Training Award Fellowship

Bethesda, MD

- Studied size distribution of vaccines devised to control typhoid fever in The Lab of Integrative and Medical Biophysics
- Fluorescently labeled protein components of vaccines, enabling size determination via Fluorescence Correlation Spectroscopy
- Applied Dynamic Light Scattering towards vaccine size distribution
- Determined molecular weights using gel electrophoresis and centrifugation

Teaching Experience:

Teaching Assistant, Modern Alternative Energy Conversion Devices, Spring 2010, Spring 2009.

Teaching Assistant, Combustion Chemistry and Physics, Fall 2009, Fall 2008.