

JAMES W. RICE, PH.D.

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EDUCATION

PhD Brown University, Providence, RI, Chemical Engineering (May 2011)
ScM Brown University, Providence, RI, Engineering (May 2008)
BS Northeastern University, Boston, MA, Chemical Engineering (May 2006)

DISSERTATION

Thermodynamics and Phase Behavior of Polycyclic Aromatic Hydrocarbon Mixtures

RESEARCH INTERESTS

My research interests center on the fate and transport, chemistry, and thermodynamics of ubiquitous environmental contaminants, specifically those related to the energy industry. Much of my work to date has focused on fundamental mixture thermodynamics. With future development as a researcher, I will look to foster more practical insight into the way complex chemical systems interact with surrounding environments such as air, water, soil, and biological systems and to develop pragmatic risk assessment and remediation models. In addition to laboratory work, I am interested in applying these techniques to related field, industry, and/or translational studies.

PUBLICATIONS

J.W. Rice, J. Fu, E.M. Suuberg. "Thermodynamics and Phase Behavior of Polycyclic Aromatic Hydrocarbon Mixtures" in Polycyclic Aromatic Hydrocarbons: Chemistry, Occurrence, and Health Issues, Nova Science Publishers, Inc. (Submitted 2012).

J. Fu, **J.W. Rice**, E.M. Suuberg. "Phase Behavior and Thermochemical Properties of Polycyclic Aromatic Hydrocarbons and Their Derivatives" in Polycyclic Aromatic Hydrocarbons: Chemistry, Occurrence, and Health Issues, Nova Science Publishers, Inc. (Accepted 2012).

J. Fu, **J.W. Rice**, E.M. Suuberg. "Phase Behavior and Crystal Structure of Binary Polycyclic Aromatic Compound Mixtures" in Advances in Crystallization Processes, Y. Mastai, Ed., InTech (2012)

J.W. Rice, J. Fu, E.M. Suuberg. "Thermodynamics of Multicomponent PAH Mixtures and Development of Tarlike Behavior." *Industrial and Engineering Chemistry Research* (2011).

J.W. Rice, J. Fu, E.M. Suuberg. "Anthracene + Pyrene Solid Mixtures: Eutectic and Azeotropic Character." *Journal of Chemical & Engineering Data* (2010).

J.W. Rice, E.M. Suuberg. "Thermodynamic Study of (Anthracene + Benzo[a]Pyrene) Solid Mixtures." *Journal of Chemical Thermodynamics* (2010).

J. Fu, **J.W. Rice**, E.M. Suuberg. "Phase Behavior and Vapor Pressures of the Pyrene + 9,10-Dibromoanthracene System." *Fluid Phase Equilibria* (2010).

CONFERENCE PRESENTATIONS

J.W. Rice, J. Fu, E. Sapei, E.M. Suuberg. "Vapor Pressure and Enthalpy of Vaporization of 1-Butyl-3-methyl-imidazolium bis(trifluoromethylsulfonyl)imide Determined by the Knudsen Effusion Technique" International Conference on Chemical Thermodynamics (Accepted 2012)

D. Young, **J.W. Rice**, D. Hibbett. "Analyzing the Role of White-Rot Fungi in Bioremediation Using Transcriptome and Degradation Assays Following Growth on Number 6 Fuel Oil." Mycological Society of America Meeting (Accepted 2012).

J.W. Rice, R.J. Browne, E.M. Suuberg. "Aqueous Solubility of Binary and Multicomponent, Tarlike PAH Mixtures." AIChE Spring Meeting (2012).

J.W. Rice, M.R. Thompson, E.M. Suuberg. "The Design and Scope of an Effective SRP State Agency Liaison Process." Superfund Research Program Annual Meeting (2011).

J.W. Rice, J. Fu, E.M. Suuberg. "Phase and partition behavior of multiple-component PAH mixture systems." 241st ACS National Meeting (2011).

J.W. Rice, J. Fu, E.M. Suuberg. "Thermodynamic and Phase Behavior Evaluation of Polycyclic Aromatic Hydrocarbon Solid Mixtures." Superfund Research Program Annual Meeting (2010).

J.W. Rice, J. Fu, E.M. Suuberg. "Thermodynamic Evaluation of Polycyclic Aromatic Hydrocarbon Solid Mixtures." 28th Annual New England Membrane Enzyme Group Meeting (2010).

J.W. Rice, J. Fu, E.M. Suuberg. "Phase behavior of polycyclic aromatic hydrocarbon mixtures: Eutectic formation, deviation from Raoult's law, and solid azeotropy." 240th ACS National Meeting (2010).

J.W. Rice, J. Fu, E.M. Suuberg. "Polycyclic Aromatic Hydrocarbon Mixtures: Phase Behavior and Deviation from Raoult's Law." Superfund Research Program Annual Meeting (2009).

TEACHING EXPERIENCE

BROWN UNIVERSITY, Providence, RI

Research Assistant (Graduate and Post-Doctoral)

- Mentor and facilitate the collaborative and independent research of graduate and undergraduate students as a senior laboratory member and team leader.

Teaching Assistant

- Heat and Mass Transfer, Spring 2011
- Chemical and Biochemical Reaction Design, Fall 2010
- Thermodynamics, Spring 2008, 2010
- Fluid Mechanics, Fall 2008, 2009

School of Engineering

June 2006 – Present

Sept. 2008 – May 2011

RELATED EXPERIENCE

BROWN UNIVERSITY, Providence, RI
State Agencies Liaison

Superfund Research Program
June 2011 - Present

- Coordinate translation of Superfund-related research into professional practice and legislative/regulatory policy.
- Establish avenues of communication and facilitate partnerships among academics, government leaders, professionals, and community organizations.

ROHM AND HAAS, North Andover, MA
Engineering Co-op II

Metalorganics Dept.
July – Dec. 2005

- Conducted research and experiments to design an improved production material purification step that would enhance material quality and decrease production cycle time.
- Revised, developed, reorganized, and documented cylinder-preparation and packaging procedures in order to eliminate mistakes, improve customer satisfaction, and increase process efficiency.
- Expanded the preventive maintenance system for the North Andover facility by compiling and organizing company equipment, maintenance tasks and safety information in a corporate software application.
- Created a new pyrophoric handling policy/procedure that contributed to the implementation of the Responsible Care EHS-14001 action plan.

ROHM AND HAAS, North Andover, MA
Engineering Co-op I

Metalorganics Dept.
Jul. – Dec. 2004

- Formulated and documented a new cleaning/reclaim procedure for returned customer cylinders containing pyrophoric, metalorganic material in order to make use of valuable product and equipment.

GILLETTE COMPANY, Andover, MA
Engineering Co-op

Process Development
Jan. - Dec. 2003

- Directly aided in the November 2003 launch of a new global shave prep product.
 - Developed and performed shave gel stability experiments using a rheometer and texture analyzer.
 - Executed process development experiments at the pilot and bench-top scales to determine production suitability of shave prep and antiperspirant products.
 - Analyzed rheology and texture data to determine product quality and optimal process operating conditions.
 - Presented all analysis via written reports for direct supervisors and plant manager.

FELLOWSHIPS, AWARDS & CERTIFICATIONS

2011 Outstanding Graduate Student Research Award, Brown University Chapter of Sigma Xi
2011 Outstanding Member of the Brown University Community, Sisters of Kappa Alpha Theta
2009-2010 Superfund Research Program Trainee, Brown University SRP Training Core
2006-2010 Hazardous Waste Operations and Emergency Response, OSHA Certification
2001-2006 Deans List and University Achievement Award, Northeastern University
2002 Student Athlete Award, Northeastern University

TECHNICAL AND ACADEMIC SOCIETIES

American Chemical Society
Member, Fuel Division, April 2010 - present

American Institute of Chemical Engineers
Member, September 2002 - present

Student/Postdoc/Alumni Network - Superfund Research Project

PEER REVIEWER

Environmental Science and Technology
Environmental Toxicology & Chemistry
Industrial and Engineering Chemistry Research
Fuel, The Science and Technology of Fuel and Energy
Chemosphere
Journal of Thermal Analysis and Calorimetry
American Journal of Analytical Chemistry
Journal of Crystal Growth

SERVICE

Rotary Youth Leadership Awards (1999 – 2011), Raymond, ME - Training and administration director and group counselor at RYLA, a one-week leadership camp for high school sophomores that fosters individual leadership skills in an outdoor, group setting.

REFERENCES

Dr. Eric M. Suuberg

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Associate Director, Superfund Research Program
Co-Director, Program in Innovation Management and Entrepreneurship
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Dr. Kelly Pennell

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Department of Civil & Environmental Engineering
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Dr. Indrek Kulaots

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