

CURRICULUM VITAE

NAME:

Eric G. Eddings

TITLE:

Professor, Department of Chemical Engineering, University of Utah

EDUCATION:

Ph.D. Chemical Engineering, University of Utah, 1992

B.S. Chemical Engineering, University of Utah, 1988

PROFESSIONAL SOCIETIES:

- American Institute of Chemical Engineers (AIChE)
- Combustion Institute
- American Society of Mechanical Engineers(ASME)
- American Society of Engineering Educators (ASEE)

INDUSTRIAL EXPERIENCE:

Technical Advisor (2001-present)

Reaction Engineering International, Salt Lake City, Utah

Senior Consultant (2003-2004)

Tsinghua Tongfang Co. Ltd, Beijing, China

Vice President (1998-2001)

Reaction Engineering International, Salt Lake City, Utah: Responsible for business development in new areas of technical expertise outside the scope of current corporate experience. Responsible for the identification and development of technologies and scientific capabilities.

Manager, Industrial Technologies (1996-1998)

Reaction Engineering International, Salt Lake City, Utah: Responsible for managing industrial systems numerical modeling programs. Programs to date encompass the utility, cement, metallurgical and chemical process industries, with responsibilities over the technical, fiscal and temporal progress of these programs.

Senior Engineer (1992-1996)

Reaction Engineering International, Salt Lake City, Utah: Research and consulting in the area of pollutant formation and control in combustion processes. Application of reacting

computational fluid dynamics (CFD) model to industrial problems and experimental investigations of pollutant formation/destruction.

Lead Chemist (1988)

Unisys Corp., Salt Lake Printed Circuit Facility, Salt Lake City, Utah: Chief liaison between process engineering and the chemical laboratory. Other duties included scheduling, developing new analytical methods, documentation of procedures, training. Advisor to floor support engineering.

Assistant Chemist (1985-1987)

Unisys Corp., Salt Lake Printed Circuit Facility, Salt Lake City, Utah: Process control chemistry for printed circuit manufacturing facility. Waste treatment process control chemistry; evaluating new treatment techniques. Analysis & disposition of hazardous waste drums. Wide variety of analytical instrumentation including: atomic absorption, UV/VIS, and IR spectrophotometry; gas and liquid-ion chromatography; and cyclic voltammetry.

Printed Circuit Process Technician (1982-1985)

Sperry Corp., Central Printed Circuit Facility, Salt Lake City, Utah: Operated several chemical processes involved in the manufacture of multilayer printed circuit boards including: chemical etching & photo-resist stripping, copper & solder plating. Oversee storage & dispensing of process chemicals, including drum stock and tank farm.

ACADEMIC EXPERIENCE:

Professor (2009-present)

University of Utah, Dept. of Chemical Engineering, Salt Lake City, Utah: Research in the general areas of combustion and environmental studies, and teaching responsibilities within the discipline of Chemical Engineering. Serving as Experimental Lead of the Institute for Clean and Secure Energy, with responsibility over two laboratory sites with a Laboratory Manager and technical staff at each site.

Associate Professor (2001-2009)

University of Utah, Dept. of Chemical Engineering, Salt Lake City, Utah:

Visiting Scholar (March/April 2001)

Tsinghua University, Dept. of Thermal Engineering, Beijing, People's Republic of China: Funded by the Chinese State Education Commission to visit the university to establish collaborative efforts in the area of biomass fuel utilization in fluidized-bed and stoker-fired combustors.

Research Associate Professor (2000-2001)

University of Utah, Dept. of Chemical and Fuels Engineering, Salt Lake City, Utah:

Research Assistant Professor (1998-2000)

University of Utah, Dept. of Chemical and Fuels Engineering, Salt Lake City, Utah

Instructor (1991)

University of Utah, Dept. of Chemical Engineering, Salt Lake City, Utah: Taught undergraduate course in Fundamentals of Process Engineering.

Research Assistant (1988 - 1992)

University of Utah, Dept. of Chemical Engineering, Salt Lake City, Utah: Designed, constructed, and operated a fixed-bed reactor for use in fundamental kinetic studies of toxic metals in high temperatures and reactive environments. Also utilized a 500,000 Btu/hr pilot-scale rotary kiln for additional studies of toxic metals behavior.

HONORS AND AWARDS:

- Outstanding Teaching Award, College of Engineering, 2007
- Outstanding Instructor, Department of Chemical Engineering, 2007-2008
- Rated in Top 15% of College of Engineering Instructors (2004, 2005, 2006, 2007, 2008)
- Kirkpatrick Chemical Engineering Honor Award (2005)
- Phi Kappa Phi (1992)

PATENTS PENDING:

C.A. Wight, **E.G. Eddings** and W. Ciro, "Method for Reducing Violence of Accidental Explosions of Solid Rocket Motors and Other Energetic Devices," U.S. Patent Application (#20060032562) Pending, filed June 13, 2005.

RESEARCH GRANTS:

- Current:**
- “Novel Sorbent for CO₂ Capture,” Micore, LLC, April 2009, \$51,500.
 - “Activated Carbon Drying & Raw Rice Hull Combustion & Gasification,” Producers Rice Mill, Inc., March 2009, \$12,500.
 - “Experimental Studies on Burner Characteristics, Ash Deposition, Corrosion and Chemistry under Oxycoal Combustion Conditions,” U.S. Department of Energy, w/ Reaction Engineering International, co-PI w/Jost Wendt and JoAnn Lighty, Oct. 2008 – Sept. 2011, \$833,543.
 - “Oxy-Coal Combustion in Circulating Fluidized Beds,” U.S. Department of Energy, Utah Clean Coal Program, Oct. 2008 – June 2010, \$75,081.
 - “Advanced Diagnostics for Oxycoal Combustion,” U.S. Department of Energy, Utah Clean Coal Program, w/Terry Ring, Oct. 2008 – June 2010, \$109,158.

“Near-Field Aerodynamics of Oxycoal Flames,” U.S. Department of Energy, Utah Clean Coal Program, w/Jost Wendt, Oct. 2008 – June 2010, \$125,050.

“Multi-Scale Thermal Processing (Pyrolysis) of Shale,” U.S. Department of Energy, Utah Heavy Oil Program, co-PI w/Milind Deo, Oct. 2008 – June 2010, \$151,707.

“Oxyfiring of Coal in Entrained-Flow and Fluidized Bed Combustors,” Praxair, Inc., August 2007 – August 2009, \$764,000.

“Oxy-Coal Combustion using Oxygen Transport Membranes,” U.S. Department of Energy, w/Praxair, Inc., April 2007 – March 2010, \$594,547.

“Investigation of the Emission Characteristics of Modified Coals”, Headwaters Energy Services, Inc., June 2007 – December 2009, \$172,000.

“Validation of Simulations for Jet Fuel Pool Fires – Year 6-10”, U.S. DOE program through the Center for Simulation of Accidental Fires and Explosions (C-SAFE) at the University of Utah, Dec. 2002 – Mar. 2009, \$2,270,000.

“Biomass Fuel Characterization in Stoker-Fired Furnaces”, Detroit Stoker Company, July 2001 – December 2008, \$119,000.

Past:

“Biofuel Performance Characterization in Diesel Engines,” Phase I DOD (Army) STTR w/Resodyn Corporation July 2008 – December 2008, \$30,000.

“Development of Fundamental Rate Parameters for Oxy-Coal Firing in Circulating Fluidized Beds,” U.S. Department of Energy, Utah Clean Coal Center, July 2006 – June 2008, \$185,000.

“Detailed Study of Shale Pyrolysis for Oil Production,” U.S. DOE/Utah Heavy Oil Center, co-PI w/Milind Deo, May 2007 – June 2008, \$150,000.

“Chemical Production from Coal and Oil Shale Using a Retort,” Millennium Synfuels, Inc., co-PI w/JoAnn Lighty, Kevin Whitty, Geoff Silcox, April – Feb. 2008, \$255,000.

“Combustion Characteristics of Corn Stover in a Stoker-Fired Furnace,” Detroit Stoker Company, August 2007, \$15,667.

“Combustion Characteristics of Suspension-Fired Distiller Grains and Palm Kernels,” Detroit Stoker Company, June-July 2007, \$36,212.

“Fuel Rich Reagent Injection for NO_x Control,” Electric Power Research Institute w/Reaction Engineering International, April-May, 2007, \$14,150.

“Pilot-scale Demonstration of Advanced Layered Technology Approach (ALTA) for NO_x Control in Coal-Fired Utility Boilers,” U.S. Department of Energy, w/Electric Power Research Institute and Reaction Engineering International, Oct. 2005-Apr. 2007, \$90,000.

“Sulfur Capture in Coal-Fired Stoker Furnaces”, Detroit Stoker Company, October 2006 – December 2006, \$24,000.

“Hydrocarbon Emissions from Cement Samples”, various cement companies, with Reaction Engineering International, Nov. 1999 – Dec. 2006, \$99,000.

“Emission Characteristics of Catalytically-Modified Pulverized Coal”, Headwaters Energy Services, Inc., May 2005 – December 2006, \$136,500.

“SO₂ Evolution and Capture on Cement Raw Materials,” Portland Cement Association, w/CTLGroup, Dec. 2005-Dec. 2006, \$64,000.

“Performance-Enhancing Liquid Additives for Coal-fired Power Generation,” Afton Chemical Corp., w/Reaction Engineering International, August 2005 – December 2006, \$54,360.

“Mercury Evolution from Cement Raw Materials”, Portland Cement Association w/Reaction Engineering International, June 2005 – April 2006, \$28,000.

“Multifunctional Fuel Additives for Reduced Jet Fuel Particulate Emissions”, U.S. Air Force, Phase II SBIR w/Reaction Engineering International, August 2003 – November 2005, \$200,000.

“Cofiring Bagasse and Cane Waste in Stoker-fired Boilers”, Detroit Stoker Company, March 2004 – June 2005, \$22,000.

“Enhanced Coal Reburning Under Oxidizing Conditions,” U.S. DOE, October 2002 – June 2004, \$50,000.

“Residual Ash from Coconut Char Sorbent”, U.S. Army, Phase II-plus SBIR w/Reaction Engineering International, June 2004 – August 2004, \$10,000.

“Flame Stability of Pulverized Petroleum Coke,” ConocoPhillips w/Reaction Engineering International, Sept. – Oct. 2003, \$35,000.

“Catalytic NO_x Reduction Using Waste Paint Pigments,” Waste Markets, Inc., Sept. – Nov. 2003, \$5,000.

“Design of Catalyst Slipstream Reactor,” American Electric Power (AEP) w/Reaction Engineering International, Sept. – Nov. 2003, \$7,000.

“Construction and Testing of a Corrosion Management Methodology for Coal-Fired Boilers,” Ohio Coal Development Office, State of Ohio w/Reaction Engineering International, June. – Nov. 2003, \$23,000.

“Hydrocarbon Emissions from Cement Samples”, various cement companies, with Reaction Engineering International, Nov. 1999 - June 2004, \$90,000.

“NOx Control Optimization and Integration to Utility Boilers”, U.S. DOE program, subcontract from Reaction Engineering International, Dec. 1999 – Sept. 2004, \$287,625.

“Oxygen Enhanced Combustion for NOx Control”, U.S. DOE program, subcontract from Praxair, Inc., Dec. 1999 – Dec. 2003, \$324,000.

“Fuel Additives for Reduced Jet Fuel Particulate Emissions”, U.S. Air Force, Phase I SBIR w/Reaction Engineering International, July 2002 – December 2002, \$25,000.

“Development and Demonstration of Novel Low NOx Burners for Boilers,” Institute of Gas Technology, Dec. 1999 – June 2002, \$40,000.

“Evolution of Nitrogenous Species from Mining Leachate Residues,” Cement Industry Environmental Consortium, July 2001 – October 2002, \$28,678.

“Conversion and Deposition Behavior of Black Liquor and Biomass during Thermal Conversion, DOE/NREL with Brigham Young University, Jan. – Sept. 2001, \$58,000.

“Validation of Simulations for Jet Fuel Pool Fires”, U.S. DOE program through the Center for Simulation of Accidental Fires and Explosions (C-SAFE) at the University of Utah, co-PI with Adel Sarofim, Oct. 1997 – Sept. 2002, \$2,066,000.

“Destruction of Biosludge in a Stoker-Fired Furnace”, Detroit Stoker Company, Sept. 2001 – January 2002, \$12,000.

“Construction of a Pilot-Scale Stoker Furnace”, Detroit Stoker Company, June 2000 – July 2001, \$178,000.

“Methods for the Reduction of NOx Emissions and Unburned Carbon in Ash – Phase II”, U.S. DOE program with Reaction Engineering International, co-PI with David Pershing, Sept. 1998 – Oct. 2000,

\$461,621.

“Low Emission Boilers Systems (LEBS)”, U.S. DOE program with D.B. Riley, Inc., co-PI with David Pershing, Oct. 1997 – Sept. 2001, \$2,802,754.

“Minimization of NO_x Emissions From Multi-Burner Coal-Fired Boilers”, U.S. DOE program, co-PI with David Pershing and Adel Sarofim, Sept. 1997 – Sept. 2001, \$487,000.

“Fuel-Rich SNCR”, Reaction Engineering International, Feb-March 1999, \$9,000.

“Thermal Soil Desorption”, ThermoRetec, March-April 1999, \$10,000.

“Processing and Drying of Biomass Residue for Feedstock to a Dedicated Cogeneration Facility”, DOE SBIR Phase I with Reaction Engineering International, \$14,000.

“Kinetics of Sulfur Evolution During Coal Combustion”, Electric Power Research Institute (EPRI) program, with Reaction Engineering International, July – October, 2000, \$5,000.

GRADUATE STUDENTS SUPERVISED:

Current:

Jingwei Zhang – Ph.D. Chemical Engineering (co-advisor w/Jost Wendt)

Astrid Sanchez – Ph.D. Chemistry, University of Antioquia, Colombia, (co-advisor w/Fanor Mondragon)

Joseph Adams – Ph.D. Chemical Engineering

Liyong Wang – Ph.D. Chemical Engineering

Pankaj Tiwari – Ph.D. Chemical Engineering (co-advisor w/Milind Deo)

Dadmehr Rezaei – Ph.D. Chemical Engineering (co-advisor w/Jost Wendt)

Benjamin Coates – Ph.D. Chemical Engineering

Laurie Marcotte – M.S. Chemical Engineering

Keith Gneshin – Ph.D. Chemical Engineering

Previous:

Ignacio Preciado – “*Study of Soot Deposition in Flames and Its Effect on Heat Transfer to Metal Surfaces,*” Ph.D. Thesis, Chemical Engineering, December 2008.

Tara Henriksen – “*Simultaneous Spatially and Temporally Resolved Laser Induced Incandescence and Laser Induced Fluorescence Measurements in Jet Propulsion Fuel 8 and Heptane Pool Fires,*” Ph.D. Thesis, Chemical

Engineering, December 2007.

Alexander Santamaria – “*Chemical-Structural Characterization and Ethanol Effect on the Products Generated in Ethylene and Benzene Inverse Diffusion Flames*,” Ph.D. Thesis, Chemistry, University of Antioquia, Colombia (co-advisor w/Prof. Fanor Mondragon), February 2007.

Joy Sroykum – “*Statistical Validation of Chemical Kinetic Mechanisms in Reacting Flows*,” M.S. Thesis, Chemical Engineering, August 2007.

Jacob Kingston – “*Drag on Non-Spherical, Non-Isometric Fuel Particles in Stoker-Fired Boilers*,” Ph.D. Thesis, Mechanical Engineering, December 2006.

Mauricio Naranjo – “*Particle Development in a Fluidized Bed Black Liquor Steam Reformer*,” M.S. Thesis, Chemical Engineering (w/Kevin Whitty), June 2006.

Nathan Peterson – “*Measurement of Sulfur Dioxide in a Black Liquor Recovery Boiler*,” M.S. Thesis, Chemical Engineering (w/Kevin Whitty), Dec. 2005.

Shihong Yan – “*Formulation and Some Applications of Jet Fuel Surrogates*,” Ph.D. Thesis, Chemical Engineering, Dec. 2005.

Ignacio Preciado – “*Effect of Temperature, O₂ Concentration and Fuel Additives on Soot Reduction in Jet Fuel Diffusion Flames*”, M.S. Thesis, Chemical and Fuels Engineering, June 2005.

William Ciro – “*Heat Transfer at Interfaces of a Container of High-Energy Materials Immersed in a Pool Fire*,” Ph.D. Thesis, Chemical Engineering, Dec. 2004.

Zoran Djuriscic – “*Chemical Kinetics of Nitrogen Fixation in Hydrocarbon Flame Fronts*,” Ph.D. Thesis, Chemical and Fuels Engineering, Dec. 2004.

Jimmy Daghlian – “*Soot Volume Fraction and Temperature Measurement in a Slot Burner Utilizing Laser Extinction and Emission*,” M.S. Thesis, Chemical and Fuels Engineering (w/Adel Sarofim), May, 2002.

Jacob Kingston – “*Construction, Experimental and Computational Analysis of Fluid Flow in a Stoker*,” M.E. project, Mechanical Engineering, 2002.

Marc Wachenhausen – “*The Behavior of Iron Pyrite and Toxic Metals Under Low-NO_x Firing Conditions in a Wet-Bottom Boiler*”, Diploma Thesis (M.S.) in Mechanical Engineering, RWTH-Aachen, University of Technology, Germany, Oct. 1999 (w/Ulrich Ranz).

POST-DOCTORAL RESEARCH ASSOCIATES SUPERVISED:

Current: Hongzhi Zhang, - Ph.D., Chemical Engineering, University of Utah

Husam al Gendy, - Ph.D., Physics, University of Utah (w/Milind Deo & Terry Ring)

Ignacio Preciado, - Ph.D., Chemical Engineering, University of Utah

Previous: Nathan D. Marsh, - Ph.D., Mechanical Engineering, Princeton University

Zhiwei Yang, - Ph.D., Mechanical Engineering, University of Delaware

TEACHING RESPONSIBILITIES:

Ch En 1703 Introduction to Engineering Computing

F03 (35 students), F04 (33 students), F05 (39 students), S06 (17 students)

Ch En 3353 Fluid Mechanics

F01 (32 students), F02 (31 students), F03 (30 students), F04 (30 students), F05 (38 students), F06 (34 students), F07 (53 students), F08 (35 students)

Ch En 3553 Chemical Reaction Engineering

S07 (30 students), S08 (54 students), S09 (33 students)

Ch En 4905 Senior Projects Laboratory II

S03 (12 students), S04 (21 students), S05 (22 students)

Ch En 5305/6305 Air Pollution Control Engineering

F98 (11 students), F99 (17 students), F07 (15 students)

UNIVERSITY SERVICE:

Departmental

Director of Graduate Studies (July 2002 – 2007)

Graduate Committee (July 2001 – present)

Undergraduate Curriculum Committee (July 2005 – present)

College

College Curriculum Committee (July 2001 – present)

University

Academic Senate (2007 – present)

Executive Committee – Academic Senate (2007 - 2008)

Postdoctoral Affairs Advisory Board (2006-present)

Directors of Graduate Studies Council (2002 – 2007)

University Graduate Research Fellowship Selection Committee (2003)

University Funding Incentive Seed Grant Review Committee (2004)

PROFESSIONAL SERVICE:

Conference Organization:

Conference Organizer (w/Qiang Yao of Tsinghua University) of the “U.S./China Conference on Applied Combustion Technologies”, Park City, Utah (2007), sponsored by University of Utah, Tsinghua University, CEntry Constructors and Engineers, and China Electricity Council (70 attendees)

Member of Scientific Committee “3rd International Congress on the Rational and Efficient Use of Energy,” CIUREE 2008, Medellin, Colombia, November 13-15, 2008.

Session Chair:

Chair of Three Sessions on “Oxycombustion of Coal,” 2009 American Institute of Chemical Engineers (AIChE) Annual Meeting, November 8-13, 2009, Nashville, TN.

Chair - Session on “Fundamentals: Gas-Solid Flow,” 20th International Conference on Fluidized Bed Combustion, May 18-20, 2009, Xi’an, China.

Chair of Session on “Oxycombustion of Coal,” 2008 American Institute of Chemical Engineers (AIChE) Annual Meeting, November 16-21, 2008, Philadelphia, PA.

Co-chair (w/ Bill Green, MIT) Session on “Combustion Reaction Engineering,” 2008 American Institute of Chemical Engineers (AIChE) Annual Meeting, November 16-21, 2008, Philadelphia, PA.

Co-chair (w/Arun Bose, U.S. DOE) Three Sessions on “Oxycombustion of Coal – Needs, Challenges and Opportunities,” 2007 American Institute of Chemical Engineers (AIChE) Annual Meeting, November 4-9 (2007), Salt Lake City, Utah.

Session on “Emission Reduction & Boiler Operation”, China-US Workshop on Advanced Technology of Industrial Boilers, Beijing, China (2004), sponsored by U.S. EPA, U.S. DOE.

Session on “NO_x Emissions and Control,” Annual Spring Meeting of the American Flame Research Committee, International Flame Research Foundation, Salt Lake City, UT (2004).

Session on “Organic Emissions”, Air & Waste Management Association, Boiler and Industrial Furnaces (BIF) Conference, St. Louis, MO (1997).

Session chair and co-organizer of numerous small local technical conferences and workshops (50 or less participants) (1998 – present).

Invited Panel Forums:

Educational Forum, “Professors Forum – Educating Students about the Cement Industry,” Portland Cement Association, (2002 and 2003).

Technical Forum, “Control of Mercury Emissions from Cement Kilns,” IEEE/PCA Cement Technical Conference, Dallas, TX (2003).

Public Forum, “Environmental Impact of the Construction of St. Lawrence Cement Plant”, City of Hudson, NY (2000). (public question and answer following 1-day review of Air Permit and Environmental Impact documents)

Technical Forum, “Dioxin Emissions from Cement Kilns,” Portland Cement Association, Annual Fall Meeting, Kansas City, KS (1997).

Short Courses:

“Applied Combustion Technology: Problem Solving for the Utility and Process Industries,” co-

organized and co-taught three-day short course, Salt Lake City and Provo, UT (2004, 2005, 2007) – 33 participants.

“Principles of Combustion in Cement Kilns,” organized and co-taught two-day short course, preceding IEEE/PCA Cement Technical Conference, Salt Lake City, UT (2002) – 20 participants.

“Fundamentals of Combustion and Pollutant Formation,” organized and taught one-day short course, Detroit Stoker Company, Monroe, MI (2000) – 15 participants.

“Combustion Fundamentals”, co-organized and co-taught three-day short course, Monsanto Chemical Co., Soda Springs, ID (1999). – 24 participants.

REVIEWER:

Energy & Fuels

Fuel

Combustion Science & Technology

Proceedings of the Combustion Institute

Environmental Science & Technology

ASME Journal of Heat Transfer

U.S. Department of Energy

National Institutes of Health

U.S. Department of Agriculture

Computers & Chemical Engineering

Journal of Fire Protection Engineering

Journal of the Air and Waste Management Association

Chemical Engineering Science

Environmental Engineering Science

American Chemical Society

PEER-REVIEWED PUBLICATIONS:

- A. Santamaria, N. Yang, **E.G. Eddings** and F. Mondragon, "Chemical and Morphological Characterization of the Soot Produced in an Inverse Diffusion Flame with Aromatic and Aliphatic fuels," in review, *Combustion and Flame*, 2009.
- T.L. Henriksen, G.J. Nathan, Z.T. Alwahabi, N. Qamar, T.A. Ring and **E.G. Eddings**, "Planar measurements of soot volume fraction and OH in a JP-8 pool fire," *Combustion and Flame*, 156, 1480-1492, 2009.
- K. Szemmelveisz, I. Szócs, Á.B. Palotás, L. Winkler and **E.G. Eddings**, "Examination of the Combustion Conditions of Herbaceous Biomass," *Fuel Processing Technology*, 90, 839-847, 2009.
- L. Huynh, H.R. Zhang, S. Zhang, **E.G. Eddings**, A.F. Sarofim, M. Law, P. Westmoreland and T. Truong, "Kinetics of Enol Formation from Reaction of OH with Propene," *Journal of Physical Chemistry A*, 113(13), 3177-3185, 2009.
- H.R. Zhang, **E.G. Eddings**, A.F. Sarofim and C.K. Westbrook, "Fuel Dependence of Benzene Pathways", *Proceedings of the Combustion Institute*, 32(1), 377-385, 2009.
- H.R. Zhang, **E.G. Eddings**, and A.F. Sarofim, "Pollutant Emissions from Gasoline Combustion: 1. Dependence on Fuel Structural Functionalities", *Environmental Science & Technology*, 42 (15), 5615-5621, 2008.
- K.J. Whitty, H.R. Zhang and **E.G. Eddings**, "Emissions from Syngas Combustion", *Combustion Science & Technology*, 180 (6), 1117 – 1136, 2008.
- H.R. Zhang, **E.G. Eddings**, and A.F. Sarofim, "A Journey from n-Heptane to Liquid Transportation Fuels. 1. The Role of the Allylic Radicals and Its Related Species in Aromatic Precursor Chemistry", *Energy and Fuels*, 22, 945-953, 2008.
- T.L. Henriksen, G.J. Nathan, T.A. Ring and **E.G. Eddings**, "Puffing Frequency and Soot Extinction Correlation in JP8 and Heptane Pool Fires," *Combustion Science & Technology*, 180, (4), 699-712, 2008.
- A. Santamaria, **E.G. Eddings**, and F. Mondragon, "Effect of ethanol on the chemical structure of the soot extractable material of an ethylene inverse diffusion flame," *Combustion and Flame*, **151**, 235-244, 2007.
- H. Zhang, **E.G. Eddings**, A.F. Sarofim, and C.K. Westbrook, "Mechanism Reduction and Generation Using Analysis of Major Fuel Consumption Pathways for n-Heptane in Premixed and Diffusion Flames," *Energy & Fuels*, 21(4), 1967-1976, 2007.
- H. Zhang, **E.G. Eddings** and A.F. Sarofim, "Olefin Chemistry in a Premixed n-Heptane Flame," *Energy & Fuels*, 21, 677-685, 2007.
- A. Santamaria, F. Mondragon, W. Quinones, **E.G. Eddings**, A.F. Sarofim, "Average structural analysis of the extractable material of young soot gathered in an ethylene inverse diffusion flame," *FUEL*, **86**, 1908-1917, 2007.
- N.D. Marsh, I. Preciado, **E.G. Eddings**, A.F. Sarofim, A.B. Palotas and J.D. Roberston, "Evaluation of Organo-Metallic Fuel Additives for Soot Suppression," *Combustion Science & Technology*, 179 (5), 987-1001, 2007.

- H.R. Zhang, **E.G. Eddings** and A.F. Sarofim, "Criteria for Selection of Components for Surrogates of Natural Gas and Transportation Fuels," *Proceedings of the Combustion Institute*, 31, 401-409, 2007.
- H. Zhang, **E.G. Eddings** and A.F. Sarofim, "Combustion Reactions of Paraffin Components in Liquid Transportation Fuels Using Generic Rates," *Combustion Science & Technology*, 179 (1-2), 61-89, 2007.
- A. Santamaria, F. Mondragon, A. Mondragon, N.D. Marsh, **E.G. Eddings**, A.F. Sarofim, "FT-IR and ¹H-NMR Characterization of the Products of an Ethylene Inverse Diffusion Flame," *Combustion & Flame*, 146, 52-62, 2006.
- W. Ciro, **E.G. Eddings** and A.F. Sarofim, "Experimental and Numerical Investigation of Transient Soot Buildup on a Cylindrical Container Immersed in a Jet Fuel Pool Fire," *Combustion Science & Technology*, 178 (12), 2199-2218, 2006.
- S. Yan, **E.G. Eddings**, A.B. Palotas, R.J. Pugmire and A.F. Sarofim, "Prediction of Sooting Tendency for Hydrocarbon Liquids in Diffusion Flames," **19** (6) pp 2408 - 2415, *Energy & Fuels*, 2005.
- S. Yan, Y.-J. Jiang, N.D. Marsh, **E.G. Eddings**, A.F. Sarofim, and R.J. Pugmire, "Study of the Evolution of Soot from Various Fuels," **19** (5), 1804-1811, *Energy & Fuels*, 2005.
- E.G. Eddings**, S. Yan, W. Ciro and A.F. Sarofim, "Formulation of a Surrogate for the Simulation of Jet Fuel Pool Fires," *Combustion Science & Technology*, Vol. 177 (4) pp. 715-739, 2005.
- T.L. Henriksen, G. Nathan, Z. Alwahabi, J.P. Spinti, **E.G. Eddings**, P.J. Smith, "Soot Volume Fraction from Extinction in JP-8 and Heptane Pool Fires," *Proceedings of the Fourth Australian Conference on Laser Diagnostics in Fluid Mechanics and Combustion*, Dec.7-9, 2005, Adelaide, Australia.
- A. Vikhansky, E. Bar-Ziv, B. Chudnovsky, A. Talanker, **E.G. Eddings**, M.J. Bockelie and A.F. Sarofim, "Measurements and Numerical Simulations for Optimization of the Combustion Process in a Utility Boiler," *International Journal of Energy Research*, 28:391-401, 2004.
- A. Molina, **E.G. Eddings**, D.W. Pershing and A.F. Sarofim, "Nitric Oxide Destruction during Coal and Char Combustion," *Combustion & Flame*, Vol. 136, No. 3, pp. 303-312, 2004.
- A.B. Palotas, A.F. Sarofim, C.J. Montgomery, **E.G. Eddings**, B. Dunn, "Effects of Fuel Additives on the Smoke Point of Fuels," *Material and Metallurgical Sciences, Publications of the University of Miskolc*, Vol. 31, pp. 55-63 (2003).
- A. Violi, S. Yan, **E.G. Eddings**, A.F. Sarofim, S. Granata, T. Faravelli, E. Ranzi, "Experimental Formulation and Kinetic Model for JP-8 Surrogate Mixtures," *Combustion Science & Technology*, Vol. 174 (11-12) pp. 383-401, 2002.
- A. Molina, **E.G. Eddings**, D.W. Pershing and A.F. Sarofim, "Reduction of Nitric Oxide on the Char Surface at Pulverized Coal Combustion Conditions," *Proceedings of the Combustion Institute*, Vol. 29, pp. 2275-2281, 2002.
- E.G. Eddings**, A.F. Sarofim, C.M. Lee, K.A. Davis and J.R. Valentine, "Trends in Predicting and Controlling Emissions from Coal-Fired Boilers," *Fuel Processing Technology*, Vol. 71, No. 1, pp.39-51, 2001.

- E.G. Eddings**, W. Ciro and A.F. Sarofim, "Transient Heat Transfer in Exploding and Detonating Systems," *Khimicheskaya Fizika (Chemical Physics Reports)*, 20 (6), p.108-116, 2001.
- A.F. Sarofim and **E.G. Eddings**, "Mineral Matter Transformation During Pulverized Coal Combustion," *Developments in Chemical Engineering & Mineral Processing*, Vol. 9, pp. 313-327, 2001.
- C. Lee, K.A. Davis, M.P. Heap, **E.G. Eddings** and A.F. Sarofim, "Modeling the Vaporization of Ash Constituents in a Coal-Fired Boiler," *Proceedings of the Combustion Institute*, Vol. 28, pp. 2375-2382, 2000.
- A. Molina, A.F. Sarofim, **E.G. Eddings** and D.W. Pershing, "Char Nitrogen Conversion: Implications to Emissions from Coal-Fired Utility Boilers," *Progress in Energy and Combustion Science*, Vol. 26, pages 507-531, 2000.
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Institute of Mechanics, Chinese Academy of Sciences, Beijing, China

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E.G. Eddings, "Oxy-Coal Combustion: One Solution for a Carbon-Constrained Economy," Invited Lecture, Pusan National University, Pusan, South Korea, and Korean Electric Power Research Institute, Daejeon, South Korea, March 19 and 21, 2008.

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