

## Curriculum Vitae - 2005

- Name:** JoAnn Slama Lighty
- Title:** Professor, Department of Chemical & Fuels Engineering, University of Utah  
Director, Institute for Combustion and Energy Studies
- Education:** B.S. Chemical Engineering, University of Utah, 1982  
Ph.D. Chemical Engineering, University of Utah, 1988  
Dissertation: Fundamentals of Thermal Treatment for the Cleanup of Contaminated Solid - Wastes
- Society Memberships:** Society of Women Engineers (SWE)  
American Institute of Chemical Engineers  
Secretary of Environmental Division (1990-1991)  
Director, Environmental Division (1995-1997)  
Combustion Institute  
Western States Section of Combustion Institute - Executive Committee (1999-present)
- Committee Memberships:** Chemical Engineering Advisory Council, University of North Dakota (Dec 2004-present)  
  
Engineering Advisory Council, Brown University (Feb 2004-present)  
  
Utah Women's Forum (2000-present)  
  
University of Utah Engineering Alumni Association, Board (2004-present)  
  
National Research Council Committee on Mustard Processing at Tooele Chemical Agent Disposal Facility (2004)  
  
Board of Trustees, Academy of Math, Engineering, and Science, appointed by Former Governor Leavitt (Oct 2002-July 2005)  
  
U.S. EPA:  
National Advisory Council for Environmental Policy and Technology, Environmental Technologies Subcommittee (2004-present)  
Clean Air Scientific Advisory Committee (CASAC), Technical Subcommittee for Particle Monitoring (1998-2003)  
Science Advisory Board (SAB), Environmental Engineering Committee (1992-1999)  
  
National Research Council Subcommittee on Mixed Wastes, Committee on Environmental Management Technologies, Board on Radioactive Waste Management, Commission on Geosciences, Environment, and Resources (1996-1999)  
  
Utah Engineers Council, SWE representative (1997-1999)  
  
MESA/STEP Advisory Board of Directors (1995-2004), Secretary (1997-1999)  
  
Presidential Commission on the Status of Women (1996-2000), Chair (1998-2000)
- Honors and Awards:** Distinguished Engineering Educator Award, Society of Women Engineers (2004)

Linda Amos Award for Distinguished Service to Women, University of Utah (2002)  
Utah Engineering Educator of the Year, Utah Engineering Council (2001)  
Zions Bank, Up'N Comers Award (1993)  
NSF, Presidential Young Investigator Award (1990)  
Phi Kappa Phi  
College of Engineering, Outstanding Teaching Assistant Award, University of Utah (1988)

## **Academic Experience**

- June 2004- Director, Institute for Combustion and Energy Studies  
Director of a new Institute looking at a collaboration of work done in the experimental, modeling, and analytical assessment of combustion, gasification, and fires.
- July 1999- Professor  
Present Department of Chemical Engineering  
Research interests: air pollution from combustion systems, fate of metals during incineration, particulate matter characterization, soot formation and oxidation.
- July 1997- College of Engineering, University of Utah  
June 2004 Associate Dean for Academic Affairs. Responsibilities include: oversight of the academic programs of the College of Engineering; responding to student petitions for various changes and grievances (nearly 2400 undergraduates, 600 graduate students); responsible for Office of Student Affairs for the College of Engineering which includes academic advising (implemented a College of Engineering advising program for undecided engineering majors) outreach activities, and Program for Diversity in Engineering; implementing and coordinating efforts for State-wide articulation and ABET 2000 accreditation; Chair of the New Engineering Building Committee (Fall 2001-2004) and led the project through the Master Plan, Programming, and initial design.
- August 1999-2001 Special Assistant to the Sr. Vice President for Academic Affairs, University of Utah
- August 1998- College of Engineering, University of Utah  
December 1998 Interim Dean
- July 1995- College of Engineering, University of Utah  
June 1997 Associate Dean for Outreach. Responsibilities included: oversight of the Program for Diversity in Engineering; directing various programs within the College designed to recruit undergraduates from high school and two-year colleges (initiated the College of Engineering Career Fair (for seniors in High School), Elementary Engineering Week (grades 1-6, 2500 participants), and participation in the Junior Engineering Technical Society's TEAMS competition).
- July 1994- Associate Professor  
June 1999 Department of Chemical and Fuels Engineering
- September 1988- Assistant Professor  
July 1994 Department of Chemical and Fuels Engineering

## **Research Grants and Foundation Support**

*Current:*

NIRT Investigating Nano-carbon Particles in the Atmosphere: Formation and Transformation – NSF (PI with Pugmire, Voth, Violi, and Sarofim) – \$1,800,000 - September 2003-July 2007

Fundamentals of Mercury Oxidation – DOE, Univ. Coal Research Program - \$539,400 (including match) – August 2003-July 2006

ADVANCE – Women Engineering Faculty Leadership Network – NSF, \$115,335 – June 2003- 2006

Hewlett Foundation Grant: A “CLEAR” Approach to an Improved Engineering Education - \$1,100,000 – 2003-2008 (with R. Roemer, A. Darling, M. Mathison)

C-SAFE, Soot Formation and Oxidation in Jet Fuel Pool Fires – (with Eric Eddings, Adel Sarofim) – 2002-2007

### **Current Peer-Reviewed Publications and Proceedings**

W. P. Arnott, B. Zielinska, C. F. Rogers, J. Sagebiel, K. Park, J. Chow, H. Moosmuller, J. G. Watson, K. Kelly, D. Wagner, A. Sarofim, **J. Lighty**, and G. Palmer, “Evaluation of 1047-nm photoacoustic instruments and photoelectric aerosol sensors in source sampling of black carbon aerosol and particle-bound PAHs from gasoline and diesel powered vehicles,” *Environ. Sci. Technol.*, 39, 5398-5406 (2005).

F. Rogers, P. Arnott, B. Zielinska, J. Sagebiel, K. E. Kelly, D. Wagner, **J. S. Lighty**, A.F. Sarofim, “Real-time measurements of jet aircraft engine exhaust,” *Journal of the Air and Waste Mgt. Assoc.*, 55, 583-593 (2005).

Pengzhi Jiang, D. O. Lignell, K. Kelly, C. J. Montgomery, **J. S. Lighty**, A. F. Sarofim, “Simulation of the Evolution of Particle Size Distributions in a Vehicle Exhaust Plume with Unconfined Dilution by Ambient Air,” *Journal of the Air and Waste Mgt. Assoc.*, 55, 437-445 (2005).

B. Zielinska, J. Sagebiel, W. P. Arnott, C.F. Rogers, K.E. Kelly, D.A. Wagner, **J. S. Lighty**, A.F. Sarofim, and G. Palmer, “Phase and Size Distribution of Polycyclic Aromatic Hydrocarbons in Diesel and Gasoline Vehicle Emissions”, *Environmental Science and Technology*, 38, 2557-2567 (2004).

K.E. Kelly, B. Zielinska, D.A. Wagner, M. McDaniel, **J.S. Lighty**, A.F. Sarofim, “Effect of diesel and JP8 fuels on particulate emissions,” *Military Engineer*, 629 62-65 (2004).

K.E. Kelly, D.A. Wagner, B. Bretecher, B. Holden, K. Sahay, Z. Nardi, **J.S Lighty**, A.F. Sarofim, N. Helgeson, "Evaluation of catalyzed and electrically heated soot filters for removal of particulate emissions from diesel and JP-8 fueled engines," *Journal of the Air and Waste Mgt. Assoc.* 54, p. 83-92 (2004).

K.E. Kelly, D.A. Wagner, **J.S Lighty**, A.F. Sarofim, C.F. Rogers, J. Sagebiel, B. Zielinska, W.P. Arnott, and G. Palmer, "Characterization of Exhaust Particles from Military Vehicles Fueled with Diesel, Gasoline, and JP-8," *Journal of the Air and Waste Mgt. Assoc.*, 53, p. 273-282 (2003).

C. Fred Rogers, John Sagebiel, Barbara Zielinska, W. Patrick Arnott, Eric Fujita, Jake McDonald, James Brian Griffin, Kerry Kelly, Dana Overacker, David Wagner, **JoAnn S. Lighty**, Adel Sarofim, and Glenn Palmer, "Characterization of Submicron Exhaust Particles from Engines Operating Without Load on Diesel, Gasoline, and JP-8 Fuels", *Aerosol Science and Technology*, 37, p. 355-368 (2003).

Jeon, Sun Joo, H.L.C. Meuzelaar, S.A.N. Sheya, **J. S. Lighty**, W. M. Jarman, C. Kasteler, A. F. Sarofim, “PM10 receptor and source profiling by GC/MS and principal component analysis of temporally and spatially resolved ambient samples,” *Journal of the Air and Waste Mgt. Assoc.*, 51, 766-784 (2001).

**Lighty, J.S.** , A. F. Sarofim, and J. M. Veranth, " Combustion aerosols: factors governing their size and composition and implications to human health," *Journal of the Air and Waste Mgt. Assoc.*, 50, 1565-1618 (2000).

- Sirdeshpande, A. and **J. S. Lighty**, "Kinetics of the selective catalytic reduction of NO with NH<sub>3</sub> over CuO/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub>," *Ind. Eng. Chem. Res.*, Vol. 39, No. 6, 1781-1787 (2000).
- J. M. Veranth, K. R. Smith, A. H. Hu, **J. S. Lighty**, and A. E. Aust, "Mobilization of iron from coal fly ash was dependent upon the particle size and source of coal: 2. Analysis of rates and mechanisms," *Chemical Research in Toxicology*, 13, 382-389 (2000).
- J.M. Veranth, K.R. Smith, J. G. Rohrbough, F. Huggins, A. H. Hu, **J. S. Lighty**, A. E. Aust, "Mossbauer Spectroscopy indicates that iron in aluminosilicate glass phase is the source of the bioavailable iron from coal fly ash," *Chem. Research in Toxicology*, 13, 161-164 (2000).
- K. R. Smith, J. M Veranth, A. H. Hu, **J. S. Lighty**, and A. E. Aust, "Interleukin-8 levels in human lung epithelial cells are increased in response to coal fly ash and vary with bioavailability of iron, as a function of particle size and source of coal," *Chem. Research in Toxicology*, 13, 118-125 (2000).
- Veranth, J. M., K.R. Smith, A.E. Aust, S.L. Dansie, J.B. Griffith, A.A. Hu, M.L. Higgins and **J.S. Lighty**, "Coal Fly Ash and Mineral Dust for Toxicology and Particle Characterization Studies: Equipment and Methods for PM<sub>2.5</sub>- and PM<sub>1</sub>-enriched Samples," *Aerosol Science and Technology*, 32, p. 127-141 (2000).
- Lighty, J.S.**, et al., "Emissions from Biomass Combustion in a Fluidized Bed Combustor and Gas Cleanup System," proceedings from the 15<sup>th</sup> *International Conference on Fluidized Bed Combustion*, Savannah, Georgia, May 9-13 (1999).
- Holbert, C. and **J. S. Lighty**, "Trace metals behavior during thermal treatment of sludge wastes," *Journal of Waste Management*, 18, 423-431 (1999).
- K. R. Smith, J. M. Veranth, **J. S. Lighty**, and A. E. Aust, "Mobilization of Iron from Coal Fly Ash Was Dependant upon Particle Size and Source of Coal," *Chemical Research in Toxicology*, 11 (12), p. 1494-1500 (1998).
- J. S. Lighty** and J. M. Veranth, "The role of research in practical incineration systems - a look at the past and the future," invited paper, proceedings of the 27<sup>th</sup> *Symposium (International) on Combustion*, p. 1255-1273, 1998.
- Cook, C. A., V. A. Cundy, F. S. Larsen, and **J. S. Lighty**, "A comprehensive heat transfer model for rotary desorbers," *The Canadian Journal of Chemical Engineering*, 74, 63-76 (1996).
- Kozinski, J. A., K. K. Rink, and **J. S. Lighty**, "Combustion of sludge waste in FBC. Distribution of metals and particle sizes, " proceedings from the 13<sup>th</sup> *International Conference on Fluidized Bed Combustion*, May 7-10, 1995, Kissimmee, FL.
- Rink, K. K., J. A. Kozinski, and **J. S. Lighty**, "Biosludge incineration in FBC: Behavior of ash particles," *Combustion and Flame*, 100, p. 121 (1995).
- Eddings, E. G., **J. S. Lighty**, and J. Kozinski, "Determination of metal behavior during the incineration of a contaminated montmorillonite clay," *Environmental Science and Technology*, 28, p. 1791 (1994).

### **Book Chapters and Document Contributions**

*The State of Development of Waste Forms for Mixed Wastes, US DOE's Office of Environmental Management, Committee on Mixed Wastes, Board on Radioactive Waste Management, Commission on Geosciences, Environment, and Resources, National Research Council, National Academy Press, Washington, D.C. (1999).*

W. Troxler, E. Aplerin, P. dePercin, J. Hutton, **J. S. Lighty**, C. Palmer, *Innovative Site Remediation Technology: Design and Application, Thermal Desorption*, Editor William C. Anderson, American Academy of Environmental Engineers, Annapolis, MD (1997).

*Shipboard Pollution Control, U. S. Navy Compliance with MARPOL Annex V.*, Committee on Shipboard Pollution Control, Naval Studies Board, National Research Council, National Academy Press, Washington, D.C. (1996).

Silcox, G. D., **J. S. Lighty**, and D. W. Pershing, "Incinerators," *Kirk-Othmer Encyclopedia for Chemical Technology, 4th Edition*, Vol. No. 14 (1995).

**Lighty, J. S.**, M. Cosmos, V. A. Cundy, M. Choroszy, and P. dePercin, *Innovative Site Remediation Technology: Thermal Desorption*, Vol. 6, Editor William C. Anderson, American Academy of Environmental Engineers, Annapolis, MD (1993).

*Guide to Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection - Interim Guidance*, U.S. EPA, Cincinnati, OH, 540/R-92/074A (1992).

Silcox, G. D., **Lighty, J. S.**, Owens, W. D., Pershing, D. W., and Cundy, V. A., "Thermal Effects and Heat Transfer in the Rotary-Kiln Incineration of Contaminated Soils and Sorbents," in *Emissions from Combustion Processes*, Eds. R. E. Clement and R. O. Kagel, CRC Press, Inc. (1990).

### **Current Conference Presentations, Papers and Proceedings**

A. Fry, **J. Lighty**, G. Silcox, and B. Cauch, "Experimental Study of Homogeneous Mercury Oxidation Reactions Designed to Facilitate Model Development and Mechanism Validation," International Conference on Air Quality, Arlington, VA, September 2005.

C. L. Senior, A. Fry, **J. S. Lighty**, G. D. Silcox, "Detailed kinetic modeling of homogeneous mercury oxidation reactions in a 1000 Btu/hr quartz furnace, presented at 22<sup>nd</sup> Annual International Pittsburgh Coal Conference, Pittsburgh, PA, September 2005.

V. Y. Smorodin, A. Sarofim, **J. S. Lighty**, "Study of electro-Brownian Coagulation of Aerosol (Soot) Particles," presented at the 9<sup>th</sup> International Congress on Toxic Combustion By-Products: Origin, Fate and Health Impacts, Tucson, AZ, June 2005.

D. Wagner, **J. S. Lighty**, "Development of an Electrospray for Health Effects Studies," poster presented at the 9<sup>th</sup> International Congress on Toxic Combustion By-Products: Origin, Fate and Health Impacts, Tucson, AZ, June 2005.

N. Orton, **J. S. Lighty**, and C. Merrill, "Soot formation and oxidation," presented at the 9<sup>th</sup> International Congress on Toxic Combustion By-Products: Origin, Fate and Health Impacts, Tucson, AZ, June 2005.

A. Fry, **J. S. Lighty**, G. D. Silcox, B. Cauch, "Fundamental Homogeneous Reactions of Mercury in Coal Fired Utility Boilers," presented at the "30th International Technical Conference on Coal Utilization & Fuel Systems," Clearwater, FL, April 17-21, 2005.

**J. S. Lighty**, J. Vance, and D. Niemeier, "Women in Engineering Leadership," panel presentation at the 2005 WEPAN/NAMEPA Joint Conference, Las Vegas, NV, April 10-13, 2005.

**J. S. Lighty**, N. Orton, and C. Merrill, "Soot Formation and Oxidation," presented at the ACERC Meeting, Provo, UT, Feb. 2004.

- J. S. Lighty**, R. Pugmire, A. Sarofim, A. Violi, and G. Voth, "Nano Carbon Particles in the Atmosphere: Formation and Transformation," presented at the 2004 Nanoscale Science and Engineering Grantee Conference, Arlington, VA, Dec. 13-15, 2004.
- Merrill, C. J., **J. S. Lighty**, E. G. Eddings, and A. F. Sarofim, "Investigation of the oxidation of soot in a two-stage burner system utilizing a scanning mobility particle sizer," Work in Progress Poster at the 30<sup>th</sup> International Symposium on Combustion, Chicago, IL, July 25-30, 2004.
- Jarmillo, C., **J. S. Lighty**, and H. Meuzelaar, "PM Source apportionment using organic signatures in the Paso del Norte Airshed," Work in Progress Poster at the 30<sup>th</sup> International Symposium on Combustion, Chicago, IL, July 25-30, 2004.
- J. S. Lighty**, M. P. Battin, A. R. Harris, and G. B. Mower, "Engineering Ethics – A Collaboration between Engineering and Philosophy," presented at the 2004 ASEE Annual Conference, Salt Lake City, UT, June 2004.
- Safai, N., H. Moore, and **J. S. Lighty**, "Building Bridges-From the Community College to a University Program- A Model for a Collaborative Approach," ,” presented at the 2004 ASEE Annual Conference, Salt Lake City, UT, June 2004 ( 2004 Best Paper Award, International Division of ASEE).
- J. S. Lighty**, C. Barnhart, C. Whitaker, and J. Coleman, "University of utah College of Engineering Hi-GEAR: Girls' Engineering Abilities Realized," presented at the 2004 WEPAN Conference, Albuquerque, New Mexico, June 2004.
- C. J. Merrill, **J. S. Lighty**, E. G. Eddings and A.F. Sarofim, "Investigation of the Oxidation and Fragmentation of Soot in a Two-Stage Flat Flame Burner System Utilizing a Scanning Mobility Particle Sizer," presented at the *Western States Section of the Combustion Institute*, Davis, CA, March 29-30, 2004.
- P. Jiang, **J. S. Lighty**, A. F. Sarofim, E. Eddings, "Simulation of the soot agglomerate fragmentation due to oxidation in a flame," presented at the *American Association for Aerosol Research Annual Conference*, Anaheim, CA, October 2003.
- P. Jiang, **J. S. Lighty**, A. F. Sarofim, E. Eddings, "Coagulation simulation and inference of initial particle size distributions," presented at the *American Association for Aerosol Research Annual Conference*, Anaheim, CA, October 2003.
- J. S. Lighty**, A.M. Vu, A. F. Sarofim, B. S. Haynes, and J. D. Robertson, "The role of CO<sub>2</sub> in the vaporization of metal oxides from coal combustion," presented at the 8<sup>th</sup> International Congress on Toxic Combustion By-Products: Origin, Fate and Health Impacts, Umea, Sweden, June 2003.
- P. Jiang, **J. S. Lighty**, A. F. Sarofim, E. Eddings, "Modeling the coagulation of charged particles," presented at the 3<sup>rd</sup> Joint Meeting of the US Sections of the Combustion Institute, Chicago, IL, March 2003.
- A. F. Sarofim, **J. S. Lighty**, and E. G. Eddings, "Modeling of ash vaporization during coal combustion," presented at the 2002 Annual AIChE meeting, Indianapolis, IN, November 3-8, 2002.
- J. S. Lighty**, et al., "Evaluation of real-time instruments for the characterization of aircraft particulate matter emissions," presented at the *American Association for Aerosol Research Annual Conference*, Charlotte, NC, October 2002.
- Jiang, Pengzhi, **J. S. Lighty**, A.F. Sarofim, E. G. Eddings, "Inference of initial particle size distribution from time resolved particle size distributions," presented at the *American Association for Aerosol Research Annual Conference*, Charlotte, NC, October 2002.

- S. R. Swenson, **J. S. Lighty**, B. Haynes, and A. F. Sarofim, "The role of carbon dioxide in mitigating the vaporization of metal oxides from coal combustion," presented at the *ACS Boston National Meeting*, Boston MA, August 18-22, 2002.
- A. F. Sarofim, **J. S. Lighty**, E. G. Eddings, "Combustion generated aerosols: health effects, characterization, mechanisms of formation, and modeling," keynote address at the *ACS Boston National Meeting*, Boston MA, August 18-22, 2002.
- Lighty, J.S.**, Philyaw, S., C. Barnhart, and J. Coleman, "Collaboration between the Girl Scouts of Utah and the University of Utah - Building a Better Future through Engineering," proceedings of the *WEPAN 2002 Conference*, San Juan, Puerto Rico, June 2002.
- Zhaig, Huichai, **J. S. Lighty**, H.L.C. Meuzelaar, K. Kelly, D. Wagner, S. Sheyan and A. F. Sarofim, "Particulate Matter (PM) source attribution in the Paso del Norte air basin using multivariate analysis of organic speciation data," presented at the *Western States Section of the Combustion Institute*, San Diego, CA, March 25-26, 2002.
- K.E. Kelly, et al. "Evaluation of real-time instruments for characterizing fine particles from combustion sources," presented at the *Western States Section of the Combustion Institute*, Salt Lake City, UT, October 15-16, 2001.
- S. R. Swenson, **J. S. Lighty**, B. Haynes, and A. Sarofim, "A computer model for predicting the role of CO in mitigating the vaporization of metal oxides from coal combustion," presented at the *Western States Section of the Combustion Institute*, Salt Lake City, UT, October 15-16, 2001.
- K. E. Kelly, D. A. Wagner, A.F. Sarofim, **J.S. Lighty**, W.P. Arnott, E. Fujita, C.F. Rogers, J. Sagebiel, B. Zielinska, K. A. Prather and D. T. Suess, J. Schauer, G. Palmer, "Characterization of fine particulate emissions from vehicles using real-time instruments," presented at the *222nd ACS National Meeting* -Chicago, IL August 26-30, Paper number 122 (2001).
- K.E. Kelly, D.A. Wagner, P. Jiang, A.F. Sarofim, **J.S. Lighty**, W.P. Arnott, E. Fujita, C.F. Rogers, J. Sagebiel, B. Zielinska, G. Palmer, M. Calidonna, "Using Real-Time Instruments to Characterize Fine Particles from a Variety of Combustion Sources," presented at *Seventh International Congress on Combustion By-Products*, Research Triangle Park, NC June 4-6 (2001).
- K. E. Kelly, D. A. Wagner, A.F. Sarofim, **J.S. Lighty**, W.P. Arnott, E. Fujita, C.F. Rogers, J. Sagebiel, B. Zielinska, K. A. Prather and D. T. Suess, J. Schauer, G. Palmer, M. Calidonna, "Characterization of Particulate Matter from Aircraft Ground Support Equipment," presented at *Real World Clean Air Conference*, San Diego, CA, April 23-25 (2001).
- Swenson, S.R., **J. S. Lighty**, and A. F. Sarofim, "Carbon dioxide effects on metals vaporization during coal combustion," presented at the 2<sup>nd</sup> Joint Meeting of the US Sections of the Combustion Institute, Oakland, CA, March 26-28 (2001).
- Rogers, F., B. Zielinska, J. Sagebiel, P. Arnott, E. Fujita, J. McDonald, A. Sarofim, **J. S. Lighty**, K. Kelly, D. Overacker, and D. Wager, "Characterization of exhaust particles generated by engines operating on gasoline, diesel, and JP-8 Fuels," 11<sup>th</sup> CRC On-Road Vehicle Emissions Workshop, San Diego, CA, March 26-28 (2001).
- Wagner, D., **J.S. Lighty**, A. F. Sarofim, "Particle characterization", poster presented at the Partners in Environmental Technology Technical Symposium and Workshop, Arlington, VA, November 2000.
- Veranth, J., **J.S. Lighty**, A. F. Sarofim, "The role of dilution and mixing in the behavior of ultrafine particles from combustion," presented at the American Association for Aerosol Research 19<sup>th</sup> Annual Conference, St. Louis, MO., November 2000.

**Lighty, J.S.** , D. W. Pershing, Z. M. Djuriscic, E. G. Eddings, M. Denison, M. J. Bockelie, and M. P. Heap, "Achieving Ultra-Low NO<sub>x</sub> Emissions in Coal-Fired Utility Boilers" Proceedings of the Third Joint China/USA Chemical Engineering Conference, pages 07-017 to 07-022, Beijing, China, September 25-28, 2000.

Cacciatore, D.A., E.G. Eddings, **J.S. Lighty**, and D. W. Pershing, "NO<sub>x</sub> Emissions from By-Product Fuels in Steel Making," poster presented at the Twenty-Eighth Symposium (International) on Combustion, Edinburgh, Scotland, July 2000.

Sue Anne Sheya, Henk Meuzelaar, Sun Joo Jeon, Wally Jarman, Christian Kastelar, **J. S. Lighty**, Adel Sarofim (University of Utah); Wen Whai Li, Victor Valenzuela (University of Texas El Paso); James Anderson, Soame Banerji (Arizona State University); Gerardo Mejia, Miguel Perez (Instituto Tecnológico e de Estudios Superiores Monterrey); and Bernd Simoneit (Oregon State University), "Novel analytical dimensions in exploratory field studies of air particulate matter," presented at the Air and Waste Management Association Annual Meeting, June 2000, Salt Lake City, Utah.

J. M. Veranth, A. Au Hu, **J.S. Lighty**, and A. F. Sarofim, "Mobilization of iron from coal fly ash is consistent with solid phase diffusion limited mass transfer and size dependent particle composition," presented at the PM200: Particulate Matter and Health, Specialty Conference and Exhibition, Charleston, SC, January 24-28, 2000.

Jeon, Sun Joo, H.L.C. Meuzelaar, S.A.N. Sheya, **J. S. Lighty**, W. M. Jarman, C. Kasteler, A. F. Sarofim, "PM10 receptor and source profiling by GC/MS and principal component analysis of temporally and spatially resolved ambient samples," presented at the PM200: Particulate Matter and Health, Specialty Conference and Exhibition, Charleston, SC, January 24-28, 2000.

## **Invited Papers and Seminars**

9<sup>th</sup> International Congress on Toxic Combustion By-Products: Origin, Fate and Health Impacts, Tucson, AZ, June 2005, plenary talk "Particles, Combustion, Health and the Border"

Thermal Engineering Department, Tsinghua University, Beijing, China, June 2, 2004, "Fine Particles: Issues, Solutions, and Future Work."

Third Joint China/USA Chemical Engineering Conference, Beijing, China, September 25-28, 2000, "Achieving Ultra-Low NO<sub>x</sub> Emissions in Coal-Fired Utility Boilers"

Critical Review for the Air and Waste Management Meeting, June 2000, Salt Lake City, UT, "Combustion aerosols: factors governing their size and composition and implications to human health." Paper published in *Journal of Air and Waste Management Association*.

Department of Chemical and Metallurgical Engineering, University of Nevada-Reno, Reno, Nevada, May 1999.

27<sup>th</sup> International Symposium on Combustion, Boulder, CO, August 1998, "The role of research in practical incineration systems - a look at the past and the future" (paper published).

First International Symposium on Incineration and Flue Gas Treatment Technologies, Sheffield University, UK, July 1997. "Waste Incineration for Resource Recovery in Regenerative Life Support Systems in Space"

Department of Environmental Engineering Science, California Institute of Technology, Pasadena, CA, February 1995.

Interactions of Toxic Metals with Matrix Constituents, Multipollutant Sorbent Reactivity Workshop, USEPA, Research Triangle Park, NC, July 1994.

Innovations in Thermal Desorption Technologies, presented at the Hazardous Waste Action Coalition Symposium, Washington, D.C., June 1993.

Trace Element Transformations in Coal-Fired Power Systems Workshop, chair of session on In-Furnace Control Technology, Scottsdale, AZ, April 19-22, 1993.

Innovations in Thermal Desorption Technologies, presented at the Symposium on Innovative Waste Remediation Technology "The State-of-the-Art," San Diego, CA, October 1992.

Department of Chemical Engineering, University of Washington, Seattle, Washington, February 1991