CURRICULUM VITAE

Robert H. Hurt
Professor of Engineering, Brown University

EDUCATION

Ph.D. in Chemical Engineering, Massachusetts Institute of Technology	1987
B.S. in Chemical Engineering, Michigan Technological University	1982

PROFESSIONAL APPOINTMENTS

Professor of Engineering, Brown University, Providence, RI	1999-present
Member, advisory board for Royal Society of Chemistry journal *Environmental Science Nano*	2016-present
Senior Advisory Board, scientific journal *Carbon Trends*	2021-present
Director, Brown Superfund Research Program	2016-2022
Editor-in-Chief, scientific journal *Carbon*	2013-2018
Director, Institute for Molecular and Nanoscale Innovation (IMNI)	2007-2013
Sustainable Nanotechnology Organization Council Member	2020-2023
Scientific Co-founder of new venture *Banyan Environmental*	2009
Editor for archival scientific journal *Carbon*	2003-2010
Co-Director, Rhode Island Consortium for Nanoscience and Nanotechnology	2010-2013
Editorial Board for journal, *Engineering of Biomaterials*	2008-present
Editorial Board for journal, Toxics	2013
Editorial Board for journal Nanomaterials and the Environment	2012-present
Scientific advisory board for firm, *NanoTox*	2005-2012
Scientific advisory board for firm, *Carben Semicon*	2011-2013
Visiting Professor, Department of Chemical Engineering University of Sydney, NSW Australia	2002
Editorial Board for archival Elsevier journal, *Combustion and Flame*	2003-2009
Editorial board of archival review journal, *Progress in Energy And Combustion Science*	2006-2012
Associate Professor of Engineering, Brown University,	1994-1999
Senior Member of the Technical Staff, Combustion Research Facility, Sandia National Laboratories, Livermore, CA	1990-1994

Sachgebietsleiter, Central Research and Development, Bayer AG, Leverkusen Germany	1987-1990

HONORS

Sustainable Nanotechnology Organization: Tribute session for R. Hurt at the 2024 National Conference	2024
2017 Graphene Award, International Association of Advanced Materials, Stockholm, August 2017	2017
Charles E. Pettinos Award of the American Carbon Society, for *"recent outstanding research accomplishment in the science and/or technology of carbon materials."*	2013
Excellence in Review Award, *Environmental Science and Technology*	2012
Lee Hsun Research Fellowship on Materials Science, Institute of Metal Research, Chinese Academy of Sciences	2011
Outstanding poster award at Carbon 2011 in Shanghai, China	2011
Tau Beta Pi *Dedicated Faculty Award* for superior teaching, dedication and involvement with undergraduates	2010
Graffin Lecture Award of the American Carbon Society	2004/2005
Silver Medal of the Combustion Institute, awarded for the one outstanding paper at the 25th International Symposium on Combustion" conferred at the 26th Symposium in Naples, Italy	1996
National Science Foundation CAREER Award, Chemical and Transport Systems	1996
Award for outstanding poster presentation at the Gordon Research Conference on Hydrocarbon Resources, Ventura, CA "Creation of New Carbon Forms using Nanoscale Liquid Crystal Surface Anchoring Templates"	2003
Award for outstanding poster presentation at the Gordon Research Conference on Hydrocarbon Resources, Ventura, CA, “Self-Assembly Rules for Discotic Polyaromatic Hydrocarbons"	2001
National Science Foundation Graduate Fellowship	1983-1986
Bredekamp Award at Michigan Technological University	1982
Chevron Scholarship at Michigan Technological University	1981

Awards to Students in the Group

Brown School of Engineering Outstanding ScM thesis award to Xiangning Ge	2023
American Carbon Society student abstract award to Aidan Stone	2023
Carbon Journal Prize, honorable mention (for best PhD thesis	

internationally in carbon science), to Dr. Muchun Liu 2021

Best oral presentation award, Materials Research Society fall national meeting, to Muchun Liu 2019

First place in the "Nano-Pitch" competition at the 2019 National Meeting of the Sustainable Nanotechnology Organization, San Diego; to Vidushi Shukla 2019

Best poster award in the environmental science section, NIEHS Environmental Health Sciences FEST - to PhD student Ruben Spitz 2016

EPA STAR Fellowship to Megan Creighton 2014

First place for oral presentation at the AIChE national meeting (Megan Creighton) in the Nanoscale science & engineering forum 2014

AIChE outstanding poster award to Naser Mahfouz 2014

Outstanding poster award to Megan Creighton at the Cabot Research Symposium 2014

Outstanding poster awards to PhD students Megan Creighton and Zhongying Wang at the *ASME 2013 2nd Global Congress on NanoEngineering for Medicine and Biology* 2013

Halpin Prize for interdisciplinary research to undergraduate advisee Alisa Owens 2013

Outstanding poster award to undergraduate advisee Christy Chao at the National Meeting of the American Institute of Chemical Engineers 2013

Brian Kelly award of the British Carbon Society to Ph.D. student Fei Guo 2012

Inaugural *Robert A. Meyer Award* of the American Carbon Society for paper and presentation at Carbon 2010 (to Ph.D. student Xinyuan Liu 2010

Best poster in environmental section at fall national meeting of the American Institute of Chemical Engineers: "Nanoparticle adhesion leads to impaired locomotor function and mortality in adult Drosophila" (to undergraduate advisee Daniel Vinson) 2008

First Place in the AIChE Rhode Island Paper Competition (to honors thesis advisee Natalie Johnson) 2008

Outstanding poster awards at the 2007 National Meeting of the American Institute of Chemical Engineers (to undergraduate advisees Natalie Johnson and Will Turnbull) 2007

Best poster in the environmental section at the National Meeting of the American Institute of Chemical Engineers,

"Novel Nanostructured Sorbents for Mercury Capture"
(to honors thesis advisee Shawn Manchester) 2006

Top student paper of the Society for Information Display Journal, 2005
given to joint paper of the Crawford / Hurt groups.

PROFESSIONAL ACTIVITIES

Chair, Host, and Lead Organizer of the 2020 Meeting of New England
Regional Superfund Programs, Providence, RI, March 2020 2019-20

Chair, Host, and Lead Organizer of an NIEHS-funded workshop entitled:
"2D Materials for Human Health and the Environment", held in
Nov. 2019 in conjunction with the national meeting of the
Sustainable Nanotechnology Organization, San Diego, CA 2019

Participant in "Day on Capitol Hill" visit with congressional staff
as part of small delegation from the National SRP Directors' group 2019

International Advisory Committee, Carbon2019, Lexington, KY 2018-19

International Advisory Committee, Carbon2018, Madrid, Spain 2017-18

External Advisory Board for the Harvard-NIEHS Nanosafety Center 2016-

International Advisory Committee, Carbon2017, Melbourne, Australia 2016-17

NIH Review Panelist, Nanomaterials Health Implications Research:
Engineered Nanomaterials Resource and Coordination Core (U24) 2016

Advisory Board for the Royal Society of Chemistry Journal:
Environmental Science Nano 2017

NIH Review Panelist for the Outstanding New Environmental Scientist
(ONES) Award (R01) 2016

International Advisory Board for CESEP'17 Carbon for Energy Storage 2016-17
and Environmental Protection, Lyon France.

Member of Site Review Panel for the NSF Center for the
Environmental Implications of Nanotechnology, UCLA 2015

Advisory Board for the Physical Sciences Directorate at Oak Ridge
National Laboratory, 2015 2015

International Science Advisory Board, *Carbon2015*, Dresden, Germany 2013-2015

International Selection Committee for the Utz-Hellmuth Felcht Award for outstanding contributions to the field of carbon materials and ceramic materials.	2010, 2012 2015
International Advisory Board, CSEP conference 2013, Muhlheim	2013
International Science Advisory Board, Carbon2013, Rio de Janeiro	2013
Reviewer for the National Research Council (NRC) Report: Research Strategy for Environmental, Health, and Safety (EHS) Aspects of Engineered Nanomaterials	2011
Reviewer for the Center for the Environmental Implications of Nanotechnology, centered at Duke University	2010-11
International Scientific Committee for *Carbon 2012* in Krakow, Poland	2011-12
International Advisory Committee for *Carbon2011*, Shanghai	2011
Chair, review panel for NIH nano-bio-informatics program	2010
Site review panel member for Center for the Environmental Implications of Nanotechnology, UCLA	2010
Member Brown University President's Science Council	2010-13
International Advisory Committee for *Carbon2010*, Clemson	2010
Reviewer for EPA US/UK joint program on nanotechnology and the environment (London panel, Dec 09)	2009
Co-organizer of symposium on biocompatibility for the 2009 fall national meeting of the Materials Research Society	2009
Reviewer for NSF SBIR program on nanotechnology	2009
Member of international scientific advisory board for *Carbon2009* (Biarritz, France)	2009
Invited participant in US-Korea and US-China workshops on nanotechnology.	2008
Member of Study Section for NIEHS SBRP program	2007
International Advisory Committee for CESEP conferences in 2009 and 2011	2009-11
Primary organizer of the workshop: Nanomaterials and Living Systems, involving New England researchers from Brown, MIT, Yale, and the Marine Biology Laboratory at Woods Hole, Oct. 2007	2007

Member of International Advisory Board for journal: *Engineering of Biomaterials*	2007-present
Participation in NanoBusiness Alliance Public Policy Tour in Washington D.C. and met with congressmen and congressional committees on nanotechnology safety and policy	2007
Primary organizer of the *Small Forum* – a workshop on nanotechnology collaboration between industry and Brown researchers, Feb. 2007	2007
Member of scientific advisory board for Carbon 2008, Nagano Japan	2007-8
Member of NIH Study Section on Technology Development	2006
Member of International Advisory Board for Carbon2007	2006/7
Co-Editor of *Carbon* Special Issue on Toxicity of Carbon Nanomaterials	2005
Technical Program Chair for the American Chemical Society Division Of Fuel Chemistry	2006
Co-Chair of the Colloquium on Heterogeneous Combustion, 31st International Symposium on Combustion, Heidelberg, August 2006	2006
Co-Organizer and Keynote Speaker in the Carbon Science Symposium at Carbon2005, Gyeongju, Korea, July 2005.	2005
Combustion Institute Gold Medal Nominations Committee	2005
Founding Member, Nanomaterials Safety Working Group, Brown	2005-present
Member, Editorial Board for Eurasian Chemico-Technological Journal	2004-present
Member, Advisory Committee for the American Carbon Society	2004-present
Member, Advisory Committee for the Gordon Research Conference on Hydrocarbon Resources	2004-2005
Technical Program Chair for *Carbon2004*, the leading international conference on the science and technology of carbon materials.	
Co-Organizer of Symposium on Carbon Materials and Nanomaterials at the American Chemical Society Spring 2005 Meeting.	2004-2005
Faculty Vice Chair, Brown University Research Advisory Board	2004-2007

Discussion leader (session chair and organizer) for the topical area "Advanced Carbon Materials" at the Gordon Conference on *Hydrocarbon Resources*	2005
Discussion leader (session chair and organizer) for the topical area "Combustion" Gordon Conference on *Hydrocarbon Resources*	2003
Co-chair of session on "Chemistry of Fly Ash Formation and Utilization," at the American Chemical Society National Meeting, Boston	2002.
Co-Chair of the Colloquium on the Combustion of Solid Fuels for the Twenty-Ninth International Symposium on Combustion, held in Sapporo, Japan	2002
Guest Editor for special edition of the *MRS Bulletin* on "Ecomaterials" November, 2001	2001
Member of the Honorary Editorial Advisory Board for the Journal *Carbon*.	2001-2003
Author of review of the *Chemistry and Physics of Carbon, Vol. 27*, published in the *Journal of the American Chemical Society*	2001
Member of the Silver Medal Committee of the Combustion Institute	2000-2002
Co-Chair of session on Ash Chemistry at the American Chemical Society Fall Meeting, 2002, Boston	2001
Chair of Ph.D. Dissertation Examination Committee for Alfredo Zolin, Technical University of Denmark	2001
Presenter of Nordic Countries Short Course on "Solid Fuel Combustion" at the Technical University of Denmark, April, 2001	2001
Member of User's Executive Committee for the Combustion Research Facility, Sandia National Laboratories, Livermore, CA.	1999-present
External Examiner for Ph.D. Theses of Guisu Liu, Kathy Benfell, and Daniel Roberts, University of Newcastle, New South Wales, Australia, and David Ross, University of Adelaide, South Australia, and Bo Feng, University of Queensland	1998-2000
Lead investigator in International Energy Agency Annex I collaboration	1998-1999
Gutachter for the Habilitation Thesis of Dr. Gernot Krammer, University of Graz, Austria.	1997
Member of the program committee for the 26th Symposium	1996
Member of technical advisory panel for the NSF's Advanced Combustion Engineering Research Center at the University	

of Utah and Brigham Young University.	1994,1995
Member of the Program Advisory Subcommittee on Combustion for the American Chemical Society.	1996
Member of program and editorial subcommittees for the 25th International Combustion Symposium.	1994

Proposal reviewer for NSF, US/DOE

External reviewer for *Nature Nanotechnology, Advanced Materials, ACS Nano, Environmental Science and Technology, Chemistry of Materials, Carbon, Microporous and Mesoporous Materials*, *Energy and Fuels; Combustion and Flame; Industrial and Engineering Chemistry, Research, Journal of Hazardous Materials*, *AIChE Journal, Combustion, Science, and Technology, Fuel, and The Proceedings of the Combustion Institute.*

Member of the *American Chemical Society* the *Materials Research Society,* the *American Carbon Society*, the *American Institute of Chemical Engineers*, and the *Sustainable Nanotechnology Organization.*

Patents and Commercial Products

Provisional patent application on graphene barrier layers for mosquito bite protection. New Provisional application - Brown ID: 2620. August, 2019

Provisional patent application on stretchable graphene barriers. 007690.00064 New Provisional application - Tech ID 2524. Filed July, 2017.

US Patent US6136089 Hurt, R.H., Suuberg, E., Gao, Y., Burnett, A. "Apparatus and method for deactivating carbon in fly ash," filed: Aug. 31, 1998; issued: Oct. 24, 2000

US Patent 6,521,037 Hurt, R.H., Suuberg, E., Gao, Y., Chen, X., Mehta, A., Ozone Treatment of Fly Ash, , issued Feb. 18, 2003.

US Patent 6,890,507 Chen, X., Gao, Y.M., Hurt, R.H., Suuberg, E.M., Mehta, A. Ozone Treatment of Fly Ash, Continuation in Part, issued May 10, 2005

US Patent: 6746654 Mehta, A., Hurt ,R.H., Gao, Y., Chen, X., Suuberg, E.M., "Dry and Semi-Dry Methods for Removal of Ammonia from Fly Ash," Filed: Dec. 4, 2002, issued: June 8, 2004

US Patent: 6,890,507 Ozone Treatment of Fly Ash, Continuation in Part, filed September 17, 2002, issued May 10, 2005, Xu Chen, Yuming Gao, Robert Hurt, Eric Suuberg, Arun Mehta.

US Patent US8869992 B2 Issued October 28, 2014; Lighting apparatus for capturing and stabilizing mercury

US Patent 8,506,923, issued May 26, 2015 Nanostructured Sorbent Materials for Capturing Environmental Mercury Vapor.

Patent application: Graphene-Based Environmental Barriers, January 2013. PCT/US2012/022147

Co-Developer of the NOxLOI PREDICTOR, a commercial software package for utility fuel selection.

Developer of the "Carbon Burnout Kinetic Model" (CBK), used in a variety of commercial computer codes for combustion system design, including *Fluent, AspenPlus, PC-CoalLab*, and EPRI's *NOxLOI Predictor*.

ARCHIVAL PUBLICATIONS

Publications: 155; H-factor: 73; Total citations: 15,942; citations in 2019: ~1610 (Google Scholar Citations)

1. Hurt, R. H., J. P. Longwell, and A. F. Sarofim. "Gasification Reactivity of Chars from Low-Rank Coal Lithotypes" *Fuel* 65 451-452 (1986)

2. Hurt, R. H., D. R. Dudek, J. P. Longwell, and A. F. Sarofim. "The Phenomenon of Gasification-Induced Carbon Densification and its Influence on Pore Structure Evolution" *Carbon* 26:4, 433-449 (1988)

3. Hurt, R. H., A. F. Sarofim, and J. P. Longwell. "Role of Microporous Surface Area in Uncatalyzed Carbon Gasification," *Energy and Fuels*, 5:2, 290-299 (1991).

4. Hurt, R. H., A. F. Sarofim, and J. P. Longwell. "Effect of Nonuniform Surface Reactivity on the Evolution of Pore Structure and Surface Area during Carbon Gasification" *Energy and Fuels* 5:3, 463-468 (1991)

5. Hurt, R. H., A. F. Sarofim, and J. P. Longwell. "The role of microporous surface area in the gasification of chars from a sub-bituminous coal" *Fuel* 70, 1079-1082 (1991)

6. Hurt, R. H., and M. D. Particle-Vapor Codeposition with Application to Ceramic Materials Synthesis" *AIChE Journal*, 37:10 1485-1496 (1991).

7. Hurt, R. H. and R. E. Mitchell. "On the Combustion Kinetics of Heterogeneous Char Particle Populations" *24th International Symposium on Combustion*, The Combustion Institute, Pittsburgh, PA, pp. 1233 -1241 (1992)

8. Hurt, R. H. and R. E. Mitchell. "Unified High-Temperature Char Combustion Kinetics for a Suite of Coals of Various Rank" *24th International Symposium on Combustion*, The Combustion Institute, Pittsburgh, PA, pp. 1243 - 1250 (1992)

9. Hurt, R. H., Fletcher, T. H., and Sampaio, R. S. "Heat Transfer from a Molten Phase to an Immersed Coal Particle "During Devolatilization" *ASME Journal of Heat Transfer* 115 717-723 (1993)

10. Wall, T.F., A. G. Tate, J. G. Bailey, L. G. Jenness, R.E. Mitchell, and R. H. Hurt "The Temperature, Burning Rates and Char Character of Pulverised Coal Particles Prepared from Maceral Concentrates" *24th International Symposium on Combustion*, The Combustion Institute, Pittsburgh, PA, pp. 1207 -1215 (1992)

11. Allendorf, M. D., Hurt, R. H., Yang, N, Reagan, P., and Robbins, M. "Deposition of Silicon Carbide Using the Chemical Vapor Composites Process: Process Characterization and Comparison with RASSPVDN Model Predictions" *J. Mater. Res.* 8:7 1651-1665 (1993)

12. Hurt, R. H. "Reactivity Distributions and Extinction Phenomena in Coal Char Combustion" *Energy and Fuels* 7 721-733 (1993)

13. Hurt, R. H., Sarofim, A. F., and Longwell, J. P. "Gasification-Induced Densification of Carbons: From Soot to Form Coke" *Combustion and Flame,* 95 430432 (1993).

14. Hurt, R. H. and Davis, K. A., "Near-Extinction and Final Burnout in Coal Combustion," *Proceedings of the Twenty-Fifth (International) Symposium on Combustion,* 1994, pp. 561-568.

15. Wornat, M. J., Hurt, R. H., Yang, N. Y. C., and Headley, T. J., Structural and Compositional Transformations of Biomass Chars during Combustion, *Combustion and Flame* 100: 131-143 (1995).

16. Davis, K. A., Hurt, R. H., Yang, N. Y. C., and Headley, T. H., "Evolution of Char Chemistry, Crystallinity, and Ultrafine Structure during Pulverized Coal Combustion," *Comb. and Flame*, 100, 31-40 (1995).

17. Hurt, R. H. and Gibbins, J. R., Residual Carbon from Pulverized Coal Fired Boilers 1: Size Distribution and Combustion Reactivity, *Fuel* 74:4 471-479 (1995).

18. Hurt, R.H., Davis, K.A., Yang, N.Y.C., and Headley, T.R., and Mitchell, G.D. "Residual Carbon from Pulverized Coal Fired Boilers 2: Morphology and Physicochemical Properties, *Fuel*, 74(9) 1297-1306 (1995).

19. Baxter, L. L., Mitchell, R.E., Fletcher, T.H., and Hurt, R.H., "Nitrogen Release During Coal Combustion" *Energy and Fuels*, 10 1 188-196 (1996).

20. Hurt, R.H., Lunden, M., Brehob, E.G., Maloney, D.J. "Statistical Kinetics for Pulverized Coal Combustion," accepted for publication in the *Proceedings of the 26th International Symposium on Combustion*, January, 1996.

21. Beeley, T., Crelling, J., Gibbins, J., Hurt, R., Lunden, M., Man, C., Williamson, J. Yang, N., "Transient High-Temperature Thermal Deactivation of Monomaceral-Rich Coal Chars" *Twenty-Sixth Symposium (International) on Combustion*, The Combustion Institute, Pittsburgh, 1996, pp. 3103-3110.

22. Wornat, M.J., Hurt, R.H., Davis, K.A., Yang, N.Y.C., Single-Particle Combustion of Two Biomass Chars, *Twenty-Sixth Symposium (International) on Combustion*, The Combustion Institute, Pittsburgh, 1996, pp. 3075-3083.

23. Freeman, E., Gao, Y.M., Hurt, R.H., Suuberg, E.S. "Interactions of Carbon-Containing Fly Ash with Commercial Air Entraining Agents for Concrete," *Fuel*, 76 (8) 761-765 (1997).

24. Gao, Y.; Shim, H.; Hurt, R.H.; Suuberg, E.M.; Yang, N.Y.C. "Effects of Carbon on Air-Entrainment in Fly Ash Concrete: The Role of Soot and Carbon Black," *Energy and Fuels*, 11, 457-462 (1997).

25. Hurt, R.H., Sun, J-K, and Lunden, M., "A Kinetic Model of Carbon Burnout in Pulverized Coal Combustion," *Combustion and Flame*, 113 181-197 (1998).

26. Hurt, R.H., Hu, Y. "Thermodynamics of Carbonaceous Mesophase," *Carbon* 37 281-292 (1999).

27. Hurt, R.H., Davis, K.D., "Percolative Fragmentation and Spontaneous Agglomeration," *Combustion and Flame*, 116 662-670 (1999).

28. Hachman, L., Burnett, A., Gao, Y., Hurt, R., Suuberg, E. "Surfactant Adsorptivity of Carbon Solids from Pulverized Coal Combustion under Controlled Conditions", *Twenty-Seventh Symposium (International) on Combustion*, 2965-2971, The Combustion Institute, Pittsburgh, 1998.

29. Hurt, R.H., *Structure, Properties, and Reactivity of Solid Fuels* (Invited Topical Review Paper), *Twenty-Seventh International Symposium on Combustion*, The Combustion Institute, Pittsburgh, 1998, 2887-2904.

30. Hu, Y., Calo, J.M., Hurt, R.H., Kerstein, A. "Kinetics of Orientational Order / Disorder Transitions and Their Application to Carbon Material Synthesis," *Modelling* Simul. Mater. Sci. Eng. 7 275-288 (1999).

31. Shim, H.S., Hurt, R.H., Yang, N.Y.C. "A Methodology for Analysis of 002 LF Fringe Images and Its Application to Combustion-Derived Carbons", *Carbon*, 38 29-45 (2000).

32. Shim, H., Hurt, R.H. "Thermal Annealing of Chars from Diverse Organic Precursors under Combustion-Like Conditions" *Energy and Fuels*, 14 pp. 340-348 (2000).

33. Hurt, R.H., Chen, Z-Y. "Liquid Crystals and Carbon Materials," *Physics Today*, 53 (3) 39-44 March 2000.

34. Yu, J., Külaots, I., Sabanegh, N., Gao, Y., Hurt, R.H., Suuberg, E.S., Mehta, A. "Adsorptive and Optical Properties of Fly Ash from Coal and Petroleum Coke Cofiring," *Energy and Fuels*, 14 (3) 591-596 (2000).

35. Hurt, R.H. Crawford, G.P., Shim, H.-S. "Equilibrium Nanostructure of Primary Soot Particles" Proceedings of the Combustion Institute, Vol. 28, The Combustion Institute, Pittsburgh, 2000, pp. 2539-2546.

36. Sun, J.K., Hurt, R.H., "Mechanisms of Extinction and Near-Extinction in Pulverized Solid Fuel Combustion," Proceedings of the Combustion Institute, Vol. 28, The Combustion Institute, 2000, pp. 2205-221.

37. Hu, Y., Hurt, R.H., "Thermodynamics of Carbonaceous Mesophase II: General Theory for Nonideal Solutions," *Carbon* 39 887-896 (2001).

38. Gao, Y., Külaots, I., Chen, X., Aggarwal, R., Mehta, A., Suuberg, E.M., Hurt, R.H., "Ozonation for the Chemical Modification of Carbon Surfaces in Fly Ash," *Fuel* 80 765-768 (2001).

39. Hurt, R.H., Calo, J.M. "Semi-Global Intrinsic Kinetics for Char Combustion Modeling," *Combustion and Flame*, 125:1138-1149 (2001).

40. Gao,, Y., Kulaots, I., Chen, X., Suuberg, E.M., Hurt, R.H., Veranth J.M. "The Effect of Solid Fuel Type and Combustion Conditions on Residual Carbon Properties and Fly Ash Quality," *Proc. Comb. Institute*, Vol. 29 475-483 (2002).

41. Lang, T., Hurt, R.H. "Char Combustion Reactivities for a Suite of Diverse Solid Fuels and Char-Forming Organic Model Compounds, " *Proc. Comb. Institute*, Vol 29 423-431 (2002).

42. Külaots, I., Aarna, I., Callejo, M., Hurt, R.H., Suuberg, E.M., "Development of Porosity During Coal Char Combustion," *Proc. Comb. Institute*, Vol 29 495-501 (2002).

43. Hurt, R.H., "The Role of Carbon Surface Chemistry in Fly Ash Utilization and the Potential for Ash Beneficiation by Ozone," *Energeia*, 13 4 2002.

44. Gao, Y., Chen, X., Fujisaki, G., Mehta, A., Suuberg, E.M., Hurt, R.H., "Dry and Semi-Dry Methods for Removal of Ammonia from Fly Ash," *Energy and Fuels*, 16 1398-1404 (2002).

45. Hurt, R.H., Krammer, G., Crawford, G., Jian, K., Rulison, C., "Polyaromatic Assembly Mechanisms and Structure Selection in Carbon Materials," *Chemistry of Materials*, 14 4558-4565 (2002).

46. Jian, K., Shim, H.-S., Schwartzman, A., Crawford, G.P., Hurt, R.H., "Orthogonal Carbon Nanofibers by Template-Mediated Assembly of Discotic Mesophase Pitch," *Adv. Materials*, 15 (2) 164-167 (2003) (inside cover feature).

47. Sun, J., Hurt, R.H., Niksa, S., Muzio, L., Mehta, A., Stallings, J., "A Simple Numerical Model to Estimate the Effect of Coal Selection on Pulverized Fuel Burnout," *Combustion Sci. Technol.* 175(6) 1085-1108 (2003).

48. Chen, X., Farber, M., Gao, Y., Kulaots, I., Suuberg, E.M., Hurt, R.H., "Mechanisms of Surfactant Adsorption on Nonpolar, Air-Oxidized, and Ozone-Treated Carbon Surfaces," *Carbon* 41 (8) 1489-1500 (2003).

49. Yang, N.Y.C., Jian, K.J., Kulaots, I., Crawford, G.P., Hurt, R.H. "Template Synthesis of Nanophase Mesocarbon," *Journal of Nanoscience and Nanotechnology*, 3 (5) 386-391 (2003).

50. Jian, K. Shim, H.S., Tuhus-Dubrov, D., Woodward, C., Bernstein, S. Pfeffer, M. Steingart, D., Sachsmann, S., Gournay, T., Crawford, G.P., Hurt, R.H., "Liquid Crystal Surface Anchoring of Mesophase Pitch," *Carbon*, 41 (11) 2073-2083 (2003).

51. Niksa, S., Liu, G.S., and Hurt, R.H., "Coal Conversion Submodels for Design Applications at Elevated Pressures. Part I. Devolatilization and Char Oxidation" *Progress in Energy and Combustion Science*, 29 425-477 (2003).

52. Külaots, I., Hsu, A., Hurt, R.H., Suuberg, E.M., "Adsorption of Surfactants on Unburned Carbon in Fly Ash and Development of a Standardized Foam Index Test," Cement and Concrete Research, Vol 33(12) 2091-2099 (2003).

53. Kulaots, I., Hurt, R.H., Suuberg E.M., Size Distribution of Unburned Carbon in Coal Fly Ash and its Implications," *Fuel* 83 (2) 223-230 (2004).

54. Hurt R.H., Haynes B.S., "On the Origin of Power-Law Kinetics in Carbon Oxidation," *Proc. Comb. Inst.* 30 2161-2168 (2005).

55. Jian K., Xianyu H., Eakin J., Gao Y., Crawford G.P., Hurt R.H., "Orientationally Ordered and Patterned Discotic Films and Carbon Films from Liquid Crystal Precursors," *Carbon*, 43 (2) 407-415 (2005).

56. Niksa, S., Hurt, R.H., Tominaga, H., Ando, T., "Development of an Evaluational Prediction Tool for Coal Combustion Histories, *Journal of the Japan Institute of Energy*, 82 849-855 (2003).

57. M. E. Sousa, C, Chan, K. Jian, Y. Gao, N Yang, R. Hurt, and G. P. Crawford, "Micro-Patterned Carbon Nanotube Arrays Using Pen-Writable Lyotropic Liquid Crystals," Society for Information Display Digest of Technical Papers 35,936-939 (2004).

58. Khanna, R., Sahajwalla, V., Hurt, R.H., An atomistic technique for large ensembles of high-molecular-weight polyaromatics: simulation of carbonaceous mesophase, *Carbon*, 43 67-77 (2005).

59. M. E. Sousa, C, Chan, K. Jian, Y. Gao, N. Yang, R. Hurt, and G. P. Crawford, "Novel Carbon Nanotubes Based on Disc-Rod Assemblies of Lyotropic Liquid Crystals," *Molecular Crystals and Liquid Crystals*, 435: 767-776 (2005).

60. Chan, C., Crawford, G., Gao, Y., Hurt, R.H., Jian, K., Li, H., Sheldon, BM., Sousa, M., Yang, "Liquid Crystal Engineering of Carbon Nanofibers and Nanotubes" *Carbon* 43(12) pp. 2431-2440 (2005).

61. M. E. Sousa, S. G. Cloutier, K. Q. Jian, B. S. Weissman, R. H. Hurt, and G. P. Crawford, "Patterning Lyotropic Liquid Crystals as Precursors for Carbon Nanotube Arrays," *Applied Physics Letters*, 87, 173115 (2005).

62. Sousa, M.E., Chan, C., Gao, Y., Cloutier, S., Jian K., Weissman, B., Crawford, G.P., Hurt, R., Yang, N., "Pen-writable nanocarbon arrays fabricated using liquid-crystalline materials for potential use in displays," Journal of the Society for Information Display, 13 (9) 735-741 (2005) - *outstanding student paper prize*

63. Hurt, R.H., Monthioux, M., Kane, A., "Toxicology of Carbon Nanomaterials: Status, Trends, and Perspectives on the Special Issue," *Carbon,* 44(6) 1028-1033 (2006).

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INVITED LECTURES

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6. Hurt, R.H. "Heterogeneous Kinetics in the Late Stages of Coal Combustion," presented at the Mechanical and Aerospace Department of Princeton University, Princeton, N.J. February, 1995

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11. Hurt, R.H., "Nanostructure and Properties of Flame-Formed Carbon Materials," Physical Chemistry Seminar Series, Department of Chemistry, Brown University, 1996

12. Hurt, R.H. "The Complex Kinetics of Carbon Burnout," Plenary Invited Lecture at the 1997 Eastern States Sectional Meeting of the Combustion Institute, Hartford, CN.

13. Hurt, R.H., "Heterogeneous Kinetics for Modern Solid-Fuel Combustion Processes", Department of Mechanical Engineering Seminar Series, Yale University, March, 1998.

14. Hurt, R. H., "Kinetic Models of Coal Char Combustion", Keynote Address given at the *Joint Black Coal and Power Systems CRC Conference on Coal Chemistry*, University of New South Wales, Sydney, Australia, February, 1998.

15. Hurt, R.H., "Structure, Properties, and Reactivity of Solid Fuels," Invited Topical Review Paper for the *Twenty-Seventh International Symposium on Combustion*, The Combustion Institute, Pittsburgh, 1998.

16. Hurt, R.H. "Chemical Engineering Approaches to Solid Fuel Combustion," Chemical Engineering Department Seminar at the University of Connecticut, November, 1998.

17. Hurt, R.H., Crawford, G., Calo, J.C., Hu, Y. "Nanostructures in Coal-Derived Carbons," Storch Award Symposium, American Chemical Society National Meeting, March 1999.

18. Hurt, R.H., *Modeling of Coal Combustion*, a Special Forum at the *International Conference on Coal Science*, Taiyuan, China, September, 1999.

19. Hurt, R.H., "Carbon Burnout in Coal Combustion," Plenary Lecture at the 1999 Australian Symposium on Combustion and Sixth Annual Australian Flame Days, Newcastle, New South Wales, September 1999.

20. Hurt, R.H., "Thermodynamic Rules for the Self-Organization of Carbon Materials" Materials and Mechanics Seminar Series, Brown University, March, 2000.

21. Thermodynamic Rules for the Self-Organization of Carbon Materials, Department of Chemical Engineering, Clemson University, March 2000.

22. Hurt, R.H., "Liquid Crystals and Self-Organized Carbon Materials", Physical Chemistry Seminar Series, Department of Chemistry, Brown University, April, 2000.

23. Hurt, R.H. "Thermodynamic Rules for the Self-Organization of Carbon Materials," presented at the Basic Energy Sciences Combustion Conference, Chantilly, Virginia, May 2000.

24. Hurt, R.H., "Liquid Crystals and Self-Organized Carbon Materials", Department of Chemical Engineering, University of Rhode Island, September, 2000.

25. Hurt, R.H., "Self Assembly Rules for Graphitic Carbon Materials" Department of Chemical Engineering, Tufts University, January, 2001.

26. Hurt, R.H., "Self Assembled Nanostructures in Carbon Materials" Department of Energy and Geoenvironmental Engineering, The Pennsylvania State University, February, 2001.

27. Hurt, R.H., "Designing Carbon Materials by Polyaromatic Self Assembly" Department of Chemical Engineering, The Technical University of Denmark, April, 2001.

28. Hurt, R.H., "Applications of Liquid Crystal Science to Mesophase Pitch," Conoco R&D Center, Ponca City, OK, May, 2001.

29. Lang, T., Hurt, R.H., Standard Combustion Reactivities of Chars from Diverse Solid Fuel Types, 2002 Australian Symposium on Combustion and Seventh Australian Flame Days, Adelaide, February 2002.

30. Hurt, R.H., "A Brief Tour of the Sixth Element: Its Assembly, Disassembly (Combustion), and Adsorptive Properties," presented at the Department of Chemical Engineering, University of Sydney, NSW, Australia, 2002.

31. Hurt, R.H., Krammer, G., Crawford, G., Jian, K., Rulison, C., "Assembly Mechanisms in Mesophase-Based Carbon Materials," invited for repeat presentation as poster in the interdisciplinary "Sci-Mix session" at the American Chemical Society Meeting, Boston, August, 2002.

32. Hurt, R.H., "A Brief Tour of the Sixth Element: Its Assembly, Disassembly (Combustion), and Adsorptive Properties," presented at the Department of Chemical Engineering, University of Queensland, Brisbane, Australia, 2002.

33. Hurt, R.H., "Polyaromatic Assembly Mechanisms in Carbon Materials," presented at Tohoku University, Department of Advanced Materials, Sendai, Japan, July 2002.

34. Hurt R.H., "Carbon Materials Research at Brown University," ATMI Inc., Danbury, Connecticut, August 2003.

35. Hurt R.H., Crawford G.P. New Nanocarbon Forms from Confined Liquid Crystals, Optiva Inc., South San Francisco, August 2003.

36. Hurt, R.H., "Heavy Discotic Polyaromatics: Phase Behavior, Surface Interactions, and Conversion into Novel Carbon Nanomaterials," ExxonMobil Central Research Laboratories, Clinton, NJ.

37. Hurt, R.H., "Controlling Where the Chips Fall: Novel Nanomaterials from Molecular Disks", Society for Information Display Chapter Meeting, Brown University, Sept. 18th, 2003.

38. Hurt, R.H., "Self Assembly During the Pyrolysis of Coking Coals and its Exploitation for the Synthesis of New Carbon Materials and Nanomaterials" Storch Award Session for Professor Harold Schobert, ACS National Meeting, Anaheim, March, 2004.

39. Hurt, R.H., "From gasification to templated synthesis - Pursuing carbon science in the footsteps of Akira Tomita," presented at Tohoku University, Sendai, Japan, May 2004.

40. Hurt R.H., "Oxidation on Carbon Surfaces with Complex Chemistry and Nanostructure," *19th Annual Symposium of the Israeli Section of the Combustion Institute, Haifa,* December 2003.

41. Hurt, R.H., "Liquid Crystal Engineering of Carbon Nanomaterials," 20th New England Complex Fluids Workshop, Brandeis University, September, 2004.

42. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given in the Distinguished Lecturer Series at the University of Utah, Dept. of Chemical and Fuels Engineering, Salt Lake City, October 19, 2004.

43. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* The National Renewable Energy Laboratory, Golden, Colorado, October 21, 2004.

44. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* Graftech International Ltd., December 2004.

45. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given at the Department of Mechanical and Aerospace Engineering, University of California, San Diego, January 2005.

46. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given at Michigan Technological University as part of the Arthur and Dorothy Sigel Lecture Series, January 28, 2005.

47. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given at Drexel University, Department of Materials Science, February, 2005.

48. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given at Louisiana State University, Department of Chemical Engineering, February, 2005.

49. Hurt, R.H., "The Rise and Fall: Synthesis and Destruction of Carbon Materials and Nanoforms in Flames," Plenary Lecture at the 2005 Joint U.S. Sectional Meeting of the Combustion Institute, Drexel University, Philadelphia, PA March 2005.

50. Hurt, R.H., "Nature's Minuet in C: Thermal, Catalytic, and Supramolecular Routes to New Carbon Nanomaterials," *The Graffin Lecture of the American Carbon Society,* given at Colorado School of Mines, Department of Chemical Engineering, April 1, 2005.

51. Hurt , R.H., "Nature's Minuet in C: Fabrication, Applications and Health Effects of New Carbon Nanomaterials," Keynote address at the Regional AIChE meeting at Lafayette College, Easton, PA., April 9, 2005.

52. Hurt, RH, "The Supramolecular Approach to Nanocarbon Synthesis," Keynote lecture at Carbon2005, Gyoengju, Korea, July 2005.

53. "Mechanisms of Cytotoxicity of Carbon Nanomaterials" Lin Guo, Margaret Tsien, Jody Pietruska, Daniel Morris, Vanesa Sanchez, Xinyuan Liu, Charles Vaslet, Agnes Kane, Robert Hurt, *NanoDays 2005*, Center for Biological and Environmental Nanotechnology, Rice University, Houston, Texas, October 10-12, 2005.

54. "Green" Nanotechnology through Collaborative Research on the Mechanisms of Nanomaterial Toxicity, Agnes Kane, Robert Hurt, Superfund Seminar Series, Brown University, December 19 2005.

55. "A Window of Opportunity: Designing Carbon Nanomaterials for Environmental Safety and Health," Plenary Lecture at the 7th International Symposium on Eco-Materials Processing and Design, Kyushu, Japan, January 2007.

56. Hurt, R.H., Kane, A.B., Multidisciplinary Approaches to Nanotoxicology and Nanoparticle Delivery, presented at the Showcase of Nanomedicine at Brown, May, 2006.

57. Hurt, R.H., Nanotechnology in the ACS Fuel Division -- Executive Overview of Nanotechnology Programming, presented at the ACS National Meeting, Spring 2006, Atlanta.

58. R. Hurt, A. Kane, "Green" nanotechnology through collaborative research on the mechanisms of nanomaterial toxicity, presented at *Particles2006: Medical/Biochemiocal Diagnostic, Pharmaceutical, and Drug Delivery Applications of Particle Technology*, 13-16 May 2006, Orlando, Florida.

59. Toxicology of Carbon Nanotubes (Hurt and Kane), Workshop on Carbon Nanotube Commercialization, sponsored by the World Technology Evaluation Center, held at NSF Headquarters, Arlington, VA, June 2006.

60. "A Window of Opportunity: Designing Carbon Nanomaterials for Environmental Safety and Health," Plenary Lecture at the 7th International Symposium on Eco-Materials Processing and Design, Kyushu, Japan, January 2007.

61. "Toxicologically Relevant Characterization of Carbon Nanomaterials," presented at the *Tri-National Workshop on Standards for Nanotechnology at the* National Research Council of Canada, Ottawa, February 2007

62. "Toxicologically relevant characterization of carbon nanomaterials," at *Nanotoxicology 2007*, Venice, Italy (given by Agnes Kane), March 2007

63. "Molecular Design and Detoxification of Carbon Nanomaterials, Mechanical Engineering Department Seminar at Rutgers University, April 25, 2007.

64. "How Can Materials Chemistry Contribute to Nanotoxicology?" presented at the University of Oregon Material Science Institute, July 2007.

65. "Physical and Chemical Determinants of Carbon Nanotube Toxicity," presented at the Interagency Workshop on the Environmental Implications of Nanotechnology, Washington, D.C. September 6, 2007.

66. Nanoparticle Health Effects, Web-seminar to approximately 250 researchers and environmental professionals as part of the NIEHS Risk-e-Learning internet seminar series, October, 2007.

67. "Materials Chemistry of Nanotoxicology," Department of Chemistry, Brown University, Inorganic/Materials seminar series, October, 2007.

68. "New Research Approaches for Management of the Bio-Environmental Impacts of Nanotechnology," presented at the Workshop on Nano-Environmental Research at the NSF, Arlington, VA, December, 2007.

69. “The Materials Chemistry of Nanotoxicology,” Department of Chemistry, George Washington University, February 15th 2008.

70. “Nanotechnology and the Environment: Applications and Implications,” 2008 Green Technology Conference, Providence, R.I. Feb. 28, 2008.

71. “The Materials Chemistry of Nanotoxicology,” invited seminar, Department of Chemistry, George Washington University, February 15th 2008.

72. “Nanomaterial Design for Environmental Safety and Health,” R.Hurt, invited talk at the *Green Nanotechnologies Conference*, University of Oregon, March 2008

73. “Nanomaterial Design for Environmental Safety and Health,” R.Hurt, invited talk at the US/Korea Joint Workshop on Nanobiotechnologies, Jeju Island Korea, April 2008.

74. “Near-Term Design and Processing Strategies for Safer Nanomaterials,” R. Hurt Invited talk at the *Nanomaterials for Defense* conference, Arlington, VA, April 2008.

75. Hurt, RH, The Carbon Science of Nanotoxicology, invited talk at the Symposium on Future Challenges for Carbon-based Nanoporous Materials, Chiba, Japan, July 2008.

76. Hurt RH, Kane AB, Designing Nanomaterials for Environmental Health and Safety, invited talk at the 2008 Fall Meeting of the American Chemical Society, Division of Chemical Toxicology, August, 2008.

77. “A Nano-Selenium Reactive Barrier Technology for Managing Mercury over the Life-Cycle of Fluorescent Lamps Invited talk at the NIEHS SBRP Annual Meeting, Monterey, CA, Dec 2008

78. “Nanomedicine and nanobiology at the Nanobio-interface” (title by organizers), Kane AB, Hurt RH, Invited presentation at the annual meeting of the American Association for the Advancement of Science (AAAS), Chicago, February, 2009.

79.”Design of Carbon Nanotubes for Bio- and Neuro-Compatibility” R. Hurt, invited talk at the Conference on *Nanotechnology for the Study of Cellular and Molecular Interactions,* Barga, Italy, June, 2009.

80. “Progress in the Design of Carbon Nanotubes for Environmental Health and Safety” Liu, Kulaots, Kane, Hurt, (given by X. Liu), keynote presentation at Carbon2009, Biarritz, France.

81. “Brown University Research on Nanotechnology, Health, and the Environment, R. Hurt, A. Kane, D. Lipscombe, D.Rand (given by R. Hurt) at the 27th Annual Nutmeg Meeting, Marine Biology Laboratory, Woods Hole, MA, Fall 2009.

82. “Design of Biocompatible Nanocarbons” Hurt RH, Kane AB, Lipscombe D, invited talk at the American Chemical Society Fall Meeting, 2009.

83. “Potential Human Health Impacts of Nanotechnology, MRS Annual Meeting, Dec. 2009 (A. Kane, R. Hurt, given by A.Kane)

84. “Chemistry and Materials Science of Hg Capture and Stabilization”, Invited workshop at Corning Incorporated, Corning, New York, April 2010.

85. “Nanomaterial Design for Environmental Safety and Health”, Invited lecture at the conference: “Toward the Regulation of Nanomaterials: Conversation between academia, industry, law, and government”, University of Notre Dame, May 2010.

86. Applications and Implications of Nanomaterials for Human Health and the Environment, Cabot Corporation, Billerica, MA, June 2, 2010

87. **“**Challenges for Carbon Science at the Interface with Biological Systems,” R.Hurt, Plenary lecture at *Carbon2010*, July 2010.

88. Design and Engineering of Eco-Friendly Nanomaterials (title by organizers), American College of Toxicology Annual Meeting, Baltimore, November 8-10, 2010

89. Rusting of the Trojan Horse – Ion Mediation of the Biological and Environmental Response to Nanosilver, Nutmeg meeting, Marine Biology Laboratory, Woods Hole, MA, October, 2010.

90. Rusting of the Trojan Horse – Metal Ion Mediation of Nanoparticle Toxicity, seminar at the Center for the Environmental Implications of Nanotechnology, Duke University, October, 2010.

91. “Medical Applications of Controlled Release Nanosilver”, *CytoSolv Inc*, Providence, RI, January 4, 2011.

92. Hurt RH, “Nanotoxicology – A Search for the Fundamental Material Properties that Govern Biological Response”, Berkeley Nanosciences and Nanoengineering Institute seminar series, Univ. California, Berkeley, January 28, 2011.

93. Guo F, Shenoy V, Huang, J, Hurt RH, "Graphene oxide liquid crystal and shape memory gel phases," International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2011.

94. Hurt R.H. "Which material properties / features determine the biological response to carbon nanotubes?" NIST Workshop entitled: *The New Steel? Enabling the Carbon Nanomaterials Revolution: Markets, Metrology, Safety, and Scale-up,* National Institute of Standards and Technology, Gaithersburg, MD, February 2011.

95. Fei Guo, Amartya Mukhopadhyay, Brian W. Sheldon, Robert H. Hurt, "Vertically Aligned Graphene Layer Arrays Fabricated from Chromonic Liquid Crystals," Keynote lecture at Carbon2011, Shanghai, July 2011.

96. Hurt RH, "Molecular Approaches to the Assembly and Biocompatibility of Nanocarbons", Lee Hsun Lecture at the Chinese Academy of Sciences, Institute for Metal Research, Shenyang, China, May 2011.

97. Fei Guo, Amartya Mukhopadhyay, Brian W. Sheldon, Robert H. Hurt, "Vertically aligned graphene layer arrays fabricated from chromonic liquid crystals", keynote lecture at *Carbon2011*, Shanghai.

98. Hurt RH, "Rhode Island Research on Nanotechnology for Human Health and the Environment," seminar at IIT Kanpur, August 2011.

99. Hurt R.H. "Nanotechnology for Mercury Capture, Research to Reality Conference, Northeastern University, fall 2011.

100. Hurt RH, "A Materials Scientist's Perspective on Nanotoxicology, invited talk at NanoCarbon 2011, Nagano, Japan, November, 2011.

101. "Chemical Transformations of Nanosilver in Biological Tissue and the Natural Environment" J. Liu and R.H. Hurt, ACS National Meeting, Colloids and Surface Chemistry Division, special session on Nanotechnology and the Environment, San Diego, March 2012.

102. "Environmental Transformations and Bioavailability of Metal-Containing Nanomaterials and Consumer Products", J. Liu and R.H. Hurt, EPA New England Science Forum, Boston, MA, March 14th, 2012

103. "A Tip-Entry Mechanism for the Cellular Uptake of Carbon Nanotubes and its Implications for Nanotube Safety", Xinghua Shi, Annette von dem Bussche, Robert H. Hurt, Agnes B. Kane, Huajian Gao, Keynote lecture at Carbon2012, Krakow, Poland, June 2012.

104. "Graphene Barrier Technologies: Ultrathin Films and Cargo-Filled Nanosacks", invited talk at the Cabot Corporation, Billirica, MA, Aug 2012

105. "Designing Nanomaterials for Environmental Health and Safety: A Window of Opportunity" R.H. Hurt, *Safe Nano Design Workshop, Prevention by Design*, sponsored by the Centers for Disease Control and the National Institute for Occupational Safety and Health, Albany, NY, August 2012.

106. "The Emergence of Graphene – Issues and Opportunities in Environmental Health" R. Hurt, A. Kane, Plenary talk at the NIEHS Superfund 25th Anniversary Meeting. Raleigh-Durham N.C., October 2012

107. "Graphene – Calling all Chemical Engineers", R.H. Hurt, Amgen seminar series, Univ. of Rhode Island Dept. of Chemical Engineering, September, 2012.

108. "Designing Nanomaterials for EHS – A Window of Opportunity. Invited talk to the *Nanotechnology Environmental and Health Implications (NEHI)* working group of the Nanoscale Science, Engineering, and Technology (NSET) Subcommittee, the interagency body responsible for coordinating the NNI, the Federal program that oversees nanotechnology R&D. Arlington, VA, 2012.

109. "Nanomaterial applications and implications for environmental health", invited talk at the Centers for Disease Control / ATSDR; February, 2013.

110. "Nanotechnologies for Toxicant Capture and Containment", invited talk at the ASME 2013 2nd Global Congress on NanoEngineering for Medicine and Biology, Boston, February, 2013.

111. Designing Safer Nanomaterials: The Dual Constraints of Performance and Biocompatibility, Invited talk at the NanoTech Expo in Washington, DC, May 2013.

112. "Nanomaterial Design for Environmental Health and Safety", Invited talk at the National Institute of Standards and Technology (NIST), May 2013.

113. "New Carbon Materials through Graphene Folding and Assembly", Keynote lecture at the International Union of Materials Research Societies (IUMRS) *International Conference on Advanced Materials* (IURM-ICAM2013), Qingdao, China, September 2013.

114. Graphene-Based Materials in Barrier and Encapsulation Technologies, MIT Lincoln Laboratory, Lexington, Mass., November 19, 2013.

115. “Ignoble Behavior – Environmental and Biological Transformations of Nano-Metals”, Dept. seminar, Northwestern University, Department of Civil and Environmental Engineering, November 1, 2013.

116. “Skating on Atomically Thin Ice – Environmental and Biological Interactions of Low-Dimensional Carbon Materials”, Dept. seminar, Johns Hopkins Univ, Department of Geography and Environmental Engineering, Dec 2, 2013.

117. “Skating on Atomically Thin Ice – Toward Safe Design of Low-Dimensional Nanocarbons“, Invited talk, NSF Nanoscale Science and Engineering Grantees Conference, 2013, Arlington, VA, December 2013.

118. “Collaborative Science for Safe Nanomaterial Design”, Keynote lecture at the 11th Annual Robert M. Langer Symposium, Friday, December 6th, Yale Univ. Dept. of Chemical and Environmental Engineering.

119. *Invited lecture at the Gordon Conference on Carbon Materials, June 2014 “*Skating on Atomically Thin Ice - Toward the Safe Design of Low-Dimensional Carbons”

120. Invited keynote talk at Carbon2014, Jeju Island, Korea, “Soft Matter Behavior and Biological Interactions of Graphene Materials”, July 2014

121. Keynote lecture at the Fall National ACS Meeting, August, San Francisco in session on Environmental Applications and Implications of Graphene-Based Nanomaterials: “*Biology in Flatland – Toward Safe Design of Graphene-Based Materials”,* August 2014

121. “Some Thoughts on the Environmental Health and Safety of Complex Nanosystems”, RH Hurt, invited talk at the *9th International Conference on the Environmental Effects of Nano materials and Nano particles,* Columbia, SC, Sept. 2014.

122. “Modern Approaches to the Atomic-Level Design of Functional Carbon Materials" Opening Keynote Lecture at the 16th Topical Meeting of the International Society of Electrochemistry in Angra dos Reis, Brazil. March, 2015.

123. "Case Studies in the Environmental Transformations of Non-Equilibrium Nanomaterials", Invited lecture at the ACS National Meeting, sponsoed by the Divisions of Environmental Chemistry, August 2015.

124. “Modern Approaches to the Design and Assembly of Functional Carbon Materials”, Opening plenary lecture at the First Conference of the Asociacion Mexicana El Carbono, San Luis Potosi, Mexico, October, 2015.

125. "Soft Matter Behavior of Atomically Thin Carbon Forms", Invited lecture at the Materials Research Society (MRS) National Meeting, Boston, November 2015.

126. Harvard University, Applied Physics Colloquium Seminar, School of Engineering and Applied Sciences, April 2016

127. Rice University, Materials science and engineering dept.; Oct. 2016; "Slings and Arrows – Behaviors of Low-Dimensional Materials in Biological Systems"

128. The *8th International Nanotoxicology Conference*, Boston, MA, June 2016.

129. URI, Dept. of Chemistry, "Novel behaviors and applications of atomically-thin 2D materials" Sept. 2016

130. Univ of Massachusetts (Stockbridge School of Agriculture), Oct. 2016

131. NIEHS Environmenetal Health Sciences FEST "Nano-enabled technologies for environmental health" Dec. 2016

132. "Highly textured graphene films as stretchable, breathable barriers and growth templates", 2017 Annual Meeting of the Materials Research Society, Boston, MA, November 2017

133. "Back to Nature - Environmental Transformations of Nanomaterials and Their Implications for Risk", 2017 Gordon Research Conference on Environmental Nanotechnology, June 2017.

134. "Graphene-Based Breathable Barriers for Multifunctional Fabrics", European Advanced Materials Congress, August 2017.

135. "Formation and oxidative stability of metal sulfide nanoparticles and 2D nanosheets", American Chemical Society Spring National Meeting, San Francisco, April 2017.

136. "Molecular mechanisms of nanomaterial dissolution and membrane damage", CECAM-Workshop: Tackling complexity of the nano/bio interface – computational and experimental approaches, Bremen, Germany, June 2017.

137. "Safe Design of Two-Dimensional Materials", presented at the Harvard School of Public Health (and web broadcast), HSPH-NIEHS Nanosafety Center Nanolecture Series, March 7, 2018

138. "Introduction to the Brown University Superfund Research Program" talk given at the Northeast Regional SRP Meeting, Woods Hole, Massachusetts, March 26, 2018.

139. “Wrinkling, stretching, and surface anchoring -- exploiting the soft matter behavior of graphene oxide to create new carbon architectures” invited talk at the Spring meeting of the Materials Research Society, Phoenix, Arizona, April 3, 2018.

140. “Nanocarbon Design for Environmental Health and Safety” invited talk at the Fall National Meeting of the American Chemical Society, Boston, August 20, 2018.

141. “Assembly and Safe Design of Graphenic Nanocarbons”, Materials Science Departmental Seminar, King Abdullah University of Science and Technology, Saudi Arabia, October 18 2018.

142. “Chemical Engineering Science for Graphene Technology Development”, invited area plenary at the National Meeting of the American Institute of Chemical Engineers (AIChE), Pittsburg, Pennsylvania, October 31, 2018.
143. “The Sixth Element - Chemical Engineering Approaches to Nanocarbon Assembly and Safe Design,” Adel Sarofim Memorial Lecture, University of Utah, March 25, 2019

144. “Reactive Degradation Kinetics for 2D Materials: A New Approach for High-Throughput Safety Screening and Appropriate Technology Mapping, Invited talk at Carbon 2019, July 18, 2019

145. “The Sixth Element - Chemical Engineering Approaches to Nanocarbon Assembly and Safe Design” Chemical Engineering Department Seminar, University of Connecticut, March 7, 2019

146. “2D Nanomaterials for Human Health and the Environment”, Plenary talk at the Sustainable Nanotechnology Organization 2019 National Meeting, November 9th, 2019.

147. “Environmental health applications and implications of emerging two-dimensional materials”, seminar given at the MIT Center for Environmental Health Sciences, February 21, 2021.

148. “New Graphene-Based Technologies for Environmental Health”, Yale University, Departmental Seminar in Chemical and Environmental Engineering, November 2021

149. "Porous Graphene Devices for Sampling and Pre-Concentration of PFAS in Aquatic Environments," Keynote presentation at the World Conference on Carbon, 2023, Cancun Mexico.

Outreach Talks and Activities

Hurt, R.H., "Where to Stash 80 Million Tons of Ash — Environmental Impacts of Modern Electricity Production", Sigma Xi Initiation Dinner, Brown University, April 27, 1999.

Hurt, R.H. "New Carbon Nanomaterials for the 21st Century, presented to the Aquila Fund Group Board Members, Marines Memorial Center, San Francisco, December 10, 2004 (invited by Lacy Hermann, Trustee Emeritus of Brown University and head of the Aquila Fund Group).

Project on nanomaterial toxicology featured on Brown website and in national news articles in both print and web-based press in December 2005. Examples: "Scientists question possible nanotech risks" *CNN website*, Dec. 13, 2005; More research urged on possible nanoparticle risk, *Associated Press* National Story, "Brown University testing toxicity of nanomaterials" *Nanotechnology.com*. Also *Washington Post*, *Technology Review*, *Forbes/Wolf Nanotechnology Newsletter*.

Hurt, R.H., **"**Weighing the Potential Risks of Nanotechnology," Brown Spring Forum, Providence, RI, April 2006

Hurt, R., Kane, A.B., Creating Safe Nanotechnologies through Team Science, Leadership Alliance Summer Research Program, Brown University, July 2006

Hurt, R.H., Kane, A.B., The Emerging Field of Nanotoxicology, presented at the Workshop on Nanomedicine, National Meeting of the Biomedical Engineering Society, Chicago, October 2006

"The Emerging Field of Nanotoxicology," presented at the University of Connecticut School of Pharmacy, November, 2006 (presenters: Kane, Hurt)

"A Materials Science Perspective on Developing Nanomaterials for Commercial and Environmental Applications," presented to the New England Environmental Business Council, Waltham, MA, October 2006.

"Weighing the Risks and Benefits of Nanotechnology," a panel discussion at Parents' Weekend, Brown University, October 2007.

Radio Broadcast to Brown Engineering alumni on nanotechnology safety research at Brown as part of the Brown Inside Track from Engineering (BITE) program. Moderated by Greg Crawford. Recorded Dec. 2007.

Interacted extensively with the press in 2008 on stories following our laboratory's publication of an article on nanomaterials for mercury capture from compact fluorescent lamps, including stories in the *NYTimes,* other US and foreign papers, *Chemical&Engineering News*, the *New Scientist (London)*, *Nature Nanotechnology* -

News and Views, The NIH journal *Environmental Health Perspectives*, the Brown annual report, the *Brown Alumni Monthly*, and many news websites.

Panelist on the "Role of Research in Globally Conscious Design" at the 2008 meeting on "A Better World by Design" Providence, R.I.

"Applications and Implications of Nanotechnology for the Environment and Human Health", Kane AB and Hurt RH) Outreach talk to the RI Safe Coalition Alliance, November 21st, 2008, Providence, RI.

"This Miniature Life – Anticipating a Future Shaped by Nanotechnology," R. Hurt, Commencement Forum, Brown University, May 2009

"This Miniature Life – Anticipating a Future Shaped by Nanotechnology," R. Hurt, Brown Club of Rhode Island, February, 2010

"This Miniature Life – Anticipating a Future Shaped by Nanotechnology," R. Hurt, Brown Club of Fairfield County, CN, March, 2010

Appearance on the Science Radio show: *FutureProof*, Dublin Ireland on the theory for nanosilver-induced argyria, October, 2012.

"Nanotechnology – Human Health and Environmental Impacts", Webinar given to the Northeast Waste Management Officials' Association (NEWMOA) with J. Rice and A. Kane, January 2012.

"Risks and Benefits of Graphene-based Materials for Environmental and Biomedical Applications", AB Kane, RH Hurt, Invited outreach talk at the Eagleson Institute Colloquium: *Preventing and Treating Biological Exposures - An Occupational Health Colloquium*, Providence, RI, June 2014.

Note: contributed talks at scientific conferences are not listed

CONTRACT AND GRANT RECORD

Sandia National Laboratories, "Kinetic Analysis of Sandia Combustion Database," 5/1/95-4/30/96; Role: Sole P.I.; Budget: $50,000.

Department of Energy, "Char Crystalline Transformations during Coal Combustion," 7/1/95-9/30/99; Role: Sole P.I., Budget: $245,000.

Electric Power Research Institute, "Advanced Experimental and Computational Tools for Unburned Carbon Prediction," 10/5/95 - 12/31/99; Role: Sole P.I., $305,000.

Department of Energy, "Novel utilization schemes for very high carbon ash," 10/1/96 - 9/30/2000; Role: Co-P.I. with E. Suuberg, M.J. Wornat. Budget: $538,000.

Dairyland Power / Electric Power Reserach Institute, "Assessment of Fly Ash Ozonation Technology," 5/1/98-4/30/99; Role: P.I. with E.Suuberg, $30,000.

National Science Foundation, "CAREER Award: Mesoscale Approaches to the Quantitative Description of Carbon Solids,", 7/15/96 - 6/30/00; Role: Sole P.I., Budget: $200,000.

Department of Energy, Fundamental structure-based models for char combustion," 10/01/96 - 12/21/2000; Role: lead P.I. with J. Calo, R. Essenhigh, C. Hadad, G. Stanley; Budget: $831,000.

National Science Foundation "Equipment Grant for a Solid State NMR," awarded in year 2000, Role: on of 5 Co-P.I.s (G.P. Crawford lead), Budget: $392,000.

Department of Energy, "Simultaneous Reduction of NOx and Unburned Carbon," 9/1/95 - 8/1/2000; Role: Lead PI at Brown under subcontract from Reaction Engineering Int.; Budget: $318,000.

Department of Energy, "Minimizing Net CO_2 Emissions by Oxidative Co-Pyrolysis of Coal / Biomass Blends," 10/1/2000 - 9/30/2001; Role: Sole PI; Budget: $50,000.

Department of Energy, through a subcontract with Reaction Engineering International, *Mitigation of NH3 Contamination of Ash,* 2/14/2000 - 9/30/2003. Role: Co.-P.I. with E. Suuberg. Budget: $ 180,000

Department of Energy, "Fundamental Investigation of Fuel Transformations in Advanced Coal Combustion and Gasification Processes," 9/1/2000 - 8/31/2003. Role: Lead P.I. of 4 P.I team including J. Calo, T. Fletcher (BYU), and A. Sayre (McDermott Inc.). Budget: $ 388,000.

American Chemical Society Petroleum Research Fund, "Nuclear Magnetic Resonance Studies of Mesogenic Pitch Materials," 9/1/2001-8/31/2003; Role: Co-P.I. with G.P. Crawford; Budget: $60,000.

Electric Power Research Institute, Characterization of LOI and its Role in Fly Ash Utilization, 5/15/1996 - 12/31/2002; Role: lead P.I. (Co-PI: E. Suuberg); Budget: $720,000.

Department of Energy, "Strategies and Technology for Managing High Carbon Ash," 9/1/2000-8/31/2003; Role: Co-P.I. with E. Suuberg; Budget: 397 K.

Electric Power Research Institute, "New Concepts for Managing Unburned Carbon," 1/1/2001 - 6/1/2003; Role: Sole P.I.; Budget:$152,178.

Department of Energy, "High Pressure Combustion Kinetics," 6/1/2001 - 5/31/2004, Role: Sole P.I.; Budget: 188 K.

Electric Power Research Institute, "Synthesis and Application of New Nanocarbon Forms" 1/1/2003 - 12/31/2003; Role: Sole P.I.; Budget:$50,000.

RI Space Grant fellowship for Matt Sousa (co-advisee) 2003

National Science Foundation, "Tough Nanocomposite Coatings using New Self-Organized Carbon Forms," 9/1/03 - 8/31/07; Role: Co-PI with W. Curtin, G. Crawford, B. Sheldon; Budget: $1,300,000.

National Science Foundation, "New Condensed Phase Approaches to Soot Formation, Aging, and Burnout," 2/1/04-1/31/07, Role: Sole P.I., Budget: $271,493.

Brown University, Office of the Vice President for Research Seed Funds, "Development and Validation of a Gene Expression Profile for Identification of Potentially-Carcinogenic Nanofibers,"4/1/2004 - 3/31/2005; $57,923.00.

Chemical and Physical Determinants of Carbon Nanofiber/tube Toxicity, EPA STAR Grant 83171901-0, Nanotechnology and the Environment, Health Effects of Manufactured Nanomaterials Program, with Agnes Kane, Co-PI. 8/1/2004 - 7/31/2007, $350,000.

Department of Energy, "Scale-up and Demonstration of Fly Ash Ozonation Technology," 10/1/2004-12/31/2005; Role: Sole P.I. at Brown in multi-organization team led by PPL Generation; Total Budget:$914,000, Brown Task: $65,000.

“Reuse in Rhode Island: A State-Based Approach to Complex Exposures” an NIH Superfund Basic Science Center, $15,290,000 over 5 years, 4/1/2005-3/31/2010. Role: Leader of Project 6: “Mechanisms of Hg Capture from Mixed Waste Streams,” and collaborator on Project 2: “Genotoxic Potential of Mixed Dust Exposures.” Project 6 budget estimate: $1,200,000 over five years.

Micropatterned Nanotopography Chips for Probing the Cellular Basis of Biocompatibility and Toxicity, NSF Nanoscale Interdisciplinary Research Team proposal, Role: lead P.I. with Co-P.I.s Agnes Kane, Gregory Crawford, and Jeffrey Morgan, $1,800,000, Sept. 2005-Aug. 2009.

“Evolutionary Response to Nanomaterial Exposure in the Environment: Functional Genomics of C60-Resistance in Drosophila” Brown University Seed Funds, $55,000, 4/2007 - 4/2008. P.I. David Rand; Co-P.I.s Robert Hurt, Kristi Wharton.

Sequestration and Separation of Mercury in Wet Flue Gas Desulfurization Systems, STTR with firm Envergex, $100,000. June 2007 – March 2008. P.I. Srivats Srinivasachar at Enervergex, P.I. on Brown subcontract (50 K): Robert Hurt.

Chemical, Structural, and Superstructural Determinants of Nanocarbon Toxicity, NIEHS, R01 ES016178-01, October 1, 2007 – September 30, 2011, $1,521,145 P.I. Agnes Kane, Co-P.I. R. Hurt.

Bioavailability, Transformation, and Detoxification of Core/Shell Nanomaterials, EPA, STAR grant, RD-83386201, August 1, 2008 – July 31, 2011; $400,000 (Hurt PI, Kane Co-PI).

"Reuse in Rhode Island: A State-Based Approach to Complex Exposures" an NIH Superfund Research Program Grant, $15,290,000 over 5 years, 2009-2014. Role: Leader of Project 6: "Design of Nanomaterials for Environmental Safety and Health", $1 M over five years.

NCIIA Grant on Nanotechnology for Mercury Capture, $20,000, 2009 (Hurt, PI)

NSF STTR Grant on Mercury Capture in Fluorescent Lighting Technology, Hurt PI on subcontract from Aspen Sciences, $150,000, Brown subcontract: $70,000.

DOE GAANN Training Grant, "Interdisciplinary Training the Applications and Implications of Nanotechnology" $528,000 August 2009- August 2012 (Hurt PI).

ES016178-03-S1 ARRA Competitive Revision to NIEH R01 grant: "Chemical, Structural, and Superstructural Determinants of Nanocarbon Toxicity", awarded in 2009, 270 K total budget, P.I. Agnes Kane, Co-P.I. R. Hurt.

Grand Opportunities grant, NIEHS, subcontract from Univ. Rochester, 2009.

National Institute of Standards and Technology, Grant to Establish a Rhode Island Consortium for Nanoscience and Nanotechnology, $1.2M ($600K to Brown), 2010

National Science Foundation, "Exposure Pathways, Dissolution, Kinetics, and Fate of Nanosilver in the Environment", 9/2010 – 8/2013, $290,000 (Hurt, PI).

Science and Technology Advisory Council of Rhode Island, STAC Grant: A Novel Technology for Mercury Emission Control Application, 1/2011 – 12/2011, $200,000 (Hurt, PI)

National Science Foundation, "Cellular and Biomolecular Interactions of Graphene-Family Nanomaterials" 9/2011 – 8/2014, $405,000 (Hurt, PI)

Gulf Research Initiative, "Alternatives to Chemical Dispersants for Large-Scale Petroleum Spills, $333K 2012 – 2015 (Hurt, PI of Brown Univ. subcontract from Tulane).

National Science Foundation 1240020, Center for Chemical Innovation: CO_2 as a Sustainable Feedstock, $1.7M Role: Investigator (PI Tayhas Palmore), 2012-2015.

National Science Foundation, "Cellular and Biomolecular Interactions of Graphene-Family Nanomaterials" REU supplement, $9 K, 2012.

Graphene-Polymer Composite Materials, RI Science and Technology Advisory Council grant, 2012-2013, $100K (PI A. Bose, URI).

DOE GAANN Training Grant, “Interdisciplinary Training the Applications and Implications of Nanotechnology” Renewal, 2012. $400,000 Sept. 2012 - August 2015 (Hurt PI).

National Science Foundation, INSPIRE Track 1: “Computational Design for the Safe Development of High-Aspect-Ratio Nanomaterials”, $750,000; Nov. 1, 2013 – Oct. 31, 2016 (R. Hurt PI; A. Kane and H. Gao, Co-PIs).

MIT Lincoln Laboratory, “Graphene plasmonic hybrids for optical limiting,” $48,000, 2014.

Cabot Corporation, gift in support of research on the thermal decomposition of graphite oxide, $10,000.

GAANN training grant, “Interdisciplinary Training in Applications and Implications of Nanotechnology”, Dept. of Education, $590,556. Sept. 2015-Aug. 2018. R.Hurt: P.I.

NIH Superfund Research Program center grant, “Toxicant Exposures in Rhode Island: Past, Present, and Future”, Agency: NIEHS, $10,800,000, 2015-2020, Role: Co-PI currently; assumed Director / PI role in July, 2016.

Rhode Island STAC grant, “Testing nanographene as passive samplers for contaminants of emerging concern in Narragansett Bay” $104,000, 2019, Role: PI of subcontract (lead Rainer Lohmann, URI).

National Institute of Environmental Health Sciences: R13 Conference grant to host a workshop entitled: “2D Nanomaterials for Human Health and Environment” Sept-01-2019 to August 31, 2020; $8,800; Role: PI

National Institute of Environmental Health Sciences, “SRP Collaborative Supplement for Data Integration,” July 1, 2019 - June 30, 2020; $217,566; Role: PI

National Science Foundation, "Nanosheet-Biomolecular Hybrid Films - Synthesis, Structure, and Controlled Release," April 1, 2022 – March 31st, $417,876; Role: PI

Department of Defense, Defense Threat Reduction Agency, "Super-hydrophobic breathable barrier thin films through deposition of functionalized 2D nanosheets and compressive surface texturing," Oct. 12, 2022 – Oct. 11, 2025; $1.5M; Role: PI

ACADEMIC ADVISING

Bachelor's Honors Theses

Allen Green, Biochemistry 2021

Hannah Lam, Chemical Engineering	2019
Maame Addae, Chemical Engineering	2018
Amanda Laidler, Chemical Engineering	2018
Sayaka Kochiyama, Materials Engineering	2016
Kyle Gion, Chemical Engineering	2016
Dan Tonderys, Biomedical Engineering	2014
Christie Chao, Chemical and Biochemical Engineering	2014
Alisa Owens, Chemical and Biochemical Engineering	2014
Gregory Silverberg, Chemical and Biochemical Engineering	2012
Frances Liu, Biomedical Engineering	2012
Henry Mattingly, Chemical and Biochemical Engineering	2012
Mikel Wiggins, Biology	2012
Shin Bowers, Division of Engineering, Brown	2009
Natalie Johnson, Division of Engineering, Brown	2008
Daniel Morris, Division of Engineering, Brown	2007
Shawn Manchester, Division of Engineering, Brown (Ionata award winner)	2007
Bevan Weissman, Division of Engineering, Brown	2006
Chistopher Chan, Division of Engineering, Brown	2003
Gonosuke Fujisaki, Division of Engineering, Brown	2000
Lennard Hachmann, Division of Engineering, Brown	1998
Martin Ruszkowski, Division of Engineering, Brown	1998
Julie Yu, Division of Engineering, Brown	1998
Alicia Burnette, Division of Engineering, Brown	1998
Nader Sabanegh, Division of Engineering, Brown	1997

Sc.M. Thesis

Xiangning Ge, Chemical Engineering	2023
Kyle Gion, Chemical Engineering	2018
Sayaka Kochiyama, Materials Engineering	2018

Jaskiranjeet Sodhi, Biomedical Engineering 2016

Dan Tonderys, Biomedical Engineering 2014

John Katahara, School of Engineering 2010

William Turnbull, Division of Engineering 2009

Brian Lee, Division of Engineering 2009

Mark Farber, Division of Engineering 2002

Christine Woodward, Division of Engineering, Brown 1999

Ph.D. Dissertations

Aidan Stone, School of Engineering, 2023

Muchun Liu, Department of Chemistry, 2021

Cintia Castilho, School of Engineering, 2020

Ruben Spitz-Steinberg, School of Engineering, 2017

Yang Qiu, School of Engineering, September, 2015

Zhongying Wang, Dept. of Chemistry, September, 2015

Megan Creighton, School of Engineering, May 2015

Yantao Chen, Dept. of Chemistry, May 2014

Fei Guo, School of Engineering, May 2012

Jingyu Liu, Dept. of Chemistry, May 2012

Lorin Jakubek, Division of Engineering, May, 2011

Xinyuan Liu, Dept. of Chemistry, "Role of Materials Chemistry in the Biological Response to Carbon Nanomaterials" May, 2010

Love Sarin, Division of Engineering, " NanoSelenium for Biological and Environmental Applications, August 2009

Lutfiye Bulut, Division of Engineering, "Complex Pattern Formation in Carbon Thin Films and Multi-Layer Graphene through Low Temperature Etching by Catalytic Combustion, Aug. 2009

Lin Guo, Division of Engineering

Title: Role of Redox Activity and Hydrophobicity in
Biological Interactions of Carbon Nanotubes, Jan. 2008

Joseph Fontaine, Division of Engineering
Title: Development of a Novel Hydroxyl Ammonium
Nitrate Based Liquid Propellant for Air Independent Propulsion, 2006

Kengqing Jian, Department of Chemistry
Title: Supramolecular Engineering of Carbon Nanostructures, 2006

Xu Chen, Division of Engineering
Title: Formation Mechanisms and Environmental Impact
of Carbon Materials in Fossil Fuel Power Generation, 2004

Todd Lang, Division of Engineering
Title: Comparative Char Combustion Kinetics and
Potential Greenhouse Gas Reductions for
Alternative Fuel-to-Energy Schemes, 2003

Ying Hu, Division of Engineering
Title: "Thermodynamics and Dynamics of
Carbon Nanostructure Formation", 2001

Jian-Kuan Sun, Division of Engineering
Title: "Numerical Simulation of the Carbon Burnout
Process in Solid Fuel Combustion," 2000

Hong-Shig Shim, Department of Chemistry
Title: "Nanostructure and Oxidation Reactivity of Carbons
Prepared by Rapid Heating", 1999.

Undergraduate Research Projects

Elizabeth Freeman, Alicia Burnette, Lennard Hachman, Nadar Sabanegh, Michael Pfeffer, Suzanne Sachsman, Thibeul Gornay, Daniel Steingart, Jim Andreotis, Cicely Washington, Zelalem Asmamov, Christopher Chan, Steven Bernstein, Daniel Tuhus-Dubrov, Gonosuke Fujisaki, Martin Ruskowski, Pamela Mallari, Christopher Chan, Julie Yu, Andrew Lamb, Essie Yamoah, Charlie Yongpravat, Shirlene Liu, Daniel Morris, Bevan Weissman, Trung Truong, Shawn Manchester, Natalie Johnson, Will Turnbull, Brian Lee, Saira Shirvani, Shin Bowers, David Sonshine, Samantha Espinosa, Francis Liu, Gregory Silverberg, Henry Mattingly, Christy Chao, Alisa Owens, Koketso Makhafola, Ross Brown, Charles Baumann, Catherine Hay, Ann Brasacchio, Germara Villalongo-Andino, Naser Mahfouz, Finn Van Krieken, Robbie Petteruti, Lucia Hernandez, Kyle Gion, Sayaka Kochiyama, Maame Addae, Ayisha Jackson, Hannah Lam, Allen Green, Willis Bilderback, Grace Inman, Lexi Nelson, Luke Prestwich, Aicha Sama, Rebecca Martin-Welp, Andrew Zerby, Maria Louiza Dimtsoudi, Jay O'Neil, Grey Small.

Current Students and Research Staff

Graduate students
Zidan (Ann) Yang, School of Engineering
Zach Saleeba, School of Engineering

Research Engineers
Zach Saleeba

Undergraduates or Interns
Maria Louiza Dimtsoudi, Jay O'Neil, Grey Small

COURSES TAUGHT

EN3 *Introduction to Engineering and Statics* — Undergraduate core course
EN72 *Engineering Thermodynamics* — Undergraduate core course
EN81 *Fluid Mechanics* — Undergraduate core course
EN113 *Chemical and Phase Equilibrium* — Undergraduate upper level course
EN112 *Chemical Reactor Design* — Undergraduate upper level course
EN288 *Chemical Reaction Engineering* — Graduate Course
EN292 Small Wonders – The Science, Technology, and Human Health Impacts of New Nanomaterials
EN292 Environmental Technologies and Human Heath
EN2912Y Life on the Edge – Surface and Colloid Science
EN1110 Transport and Biotransport Processes
EN298 Chemical and Transport Processes in the Environment
ENGN2912Y – Life on the Edge: Surface and Colloid Science

UNIVERSITY SERVICE

Tenure and Promotions Working Group, 2023/4

Chair, Andrew Peterson promotion committee, 2023/4

Member, Committee on Medical Faculty Appointments, 2023

Member, Committee on the Core Curriculum, 2022- present

Chair, promotion committee for Indrek Kulaots, 2022

Chair, appointment committee for Linda Abriola, 2021

Engineering Executive Committee, 2015-2019

Chair, tenure and promotion committee for Franklin Goldsmith, 2019-20

Chair, tenure and promotion committee for Andrew Peterson, 2016-17

Chair, promotion committee for Indrek Kualots, 2017

Chair, CBE faculty search committee, 2016-17

Leader of ABET re-accreditation team for chemical engineering, 2014

Director, Institute for Molecular and Nanoscale Innovation, 2007-2013.

Chair, A. Tripathi Promotion Committee, 2013

Chair of Chemical, Biochemical, and
Environmental Engineering Search Subcommittee, 2011-12

President's Science Council, 2010-12

Founding Dean of Engineering Search Committee, 2010-11

Member, engineering school planning team, 2010

Chair of Chemical, Biochemical, and
Environmental Engineering Search Subcommittee, 2010

Committee of Medical Faculty Appointments, 2010

Member of the Engineering Executive Committee (2009-2010)

Internal member of the External Review of the Dept. of Chemistry, 2010

Leader of ABET re-accreditation team for chemical engineering, 2008

Chairs and Center Directors Agenda Committee, 2008

Member of Brown/MBL institute planning team. 2008

Faculty Vice Chair of the Research Advisory Board (RAB) for the Office of the Vice President for Research (2003-2008)

Leader of the Nanotechnology Institute Planning team, 2005-2006
Director of the Institute, 2007-present

Member of the University Environmental Council, charged with coordinating environmental efforts across campus, 2008-present

Member of the MBL / Brown program steering committee

Member of an RAB subcommittee working on IRB interactions with students and faculty in the social sciences.

Member of Brown delegations to Zhejiang University and
Oak Ridge National Laboratory, 2007

Freshman advisor (AY95/96, 96/97, 98/99, 2000/01, 2004/5);

Seminar coordinator, Spring 1995, AY2004/5

Sophomore advisor (AY 96/97, 97/98)

Member of the Engineering Executive Committee (1997-2001)

Director of Graduate Programs for the Division of Engineering (fall 1998-2001)

Chair of FTCP faculty search committee (1998)

Director of Undergraduate Admissions, Division of Engineering (2002-present)

Graduate Representative for Fluid, Thermal, and Chemical Processes Group (2002-present).

Co-Chair of faculty search committee for special Interdisciplinary Initiative on Soft Materials (2003/2004)

Nanomaterials Safety Working Group, 2005-

Thesis committee member for numerous students (Sc.B. and Ph.D. levels).