

SLOAN AUTOMOTIVE LABORATORY

Mechanical Engineering Department and the MIT Energy Initiative

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Reports and Papers Related to Combustion, Engines, Combustion, Emissions and Fuels

1. Lavoie, G.A., Heywood, J.B. and Keck, J.C., "Experimental and Theoretical Investigation of Nitric Oxide Formation in Internal Combustion Engines," M.I.T. Fluid Mech. Lab. Publ. No. 69-10 (1969); Combustion Science and Technology, Vol. 1, pp. 313-326, 1970.
2. Lavoie, G.A., "Spectroscopic Measurement of Nitric Oxide in Spark-Ignition Engines," M.I.T. Fluid Mech. Lab. Publ. No. 704, 1970; Combustion and Flame 15, 97, 1970.
3. Fay, J.A., "Air Pollution from Future Giant Jetports," M.I.T. Fluid Mech. Lab. Publ. No. 70-6, 1970.
4. Tabaczynski, R.J., Hault, D.P. and Keck, J.C., "High Reynolds Number Flow in a Moving Corner," J. Fluid Mech, 42, pp. 249-255, 1970.
5. Heywood, J.B. and Keck, J.C., "Nitric Oxide Formation in Spark-Ignition Engines," distributed at "Air Pollution Symposium," M.I.T., May 5-6, 1970; presented at Internal Combustion Engine Conference, Bucharest, Rumania, June, 1970.
6. Linden, L.H. and Heywood, J.B., "Smoke Emission from Jet Engines," M.I.T. Fluid Mech. Lab. Publ. No. 70-12, 1970; Combustion Science and Technology, Vol. 2, pp. 401-411, 1971.
7. Heywood, J.B., Mathews, S.M. and Owen, B., "Predictions of Nitric Oxide Concentrations in a Spark-Ignition Engine Compared with Exhaust Measurements," SAE paper 710011, presented at SAE Automotive Engineering Congress, Detroit, MI, January, 1971.
8. Fletcher, R.S. and Heywood, J.B., "A Model for Nitric Oxide Emissions from Aircraft Gas Turbines," AIAA paper no. 71-123, presented at 9th Aerospace Science Meeting, New York, NY, January, 1971.
9. Fay, J.A. and Heywood, J.B., "The Dispersion of Pollutants from Aircraft," SAE paper 710322, presented at Conference on Aircraft and the Environment, Washington, D.C., February, 1971; SAE Transactions, Vol. 80, 1971.

10. Keck, J.C. and Gillespie, D., "Rate Controlled Partial-Equilibrium Method for Treating Reacting Gas Mixtures," M.I.T. Fluid Mech. Lab. Publ. No. 71-2, 1971; *Combustion & Flame*, 17, 237, 1971.
11. Radcliffe, S.W. and Appleton, J.P., "Shock-Tube Measurements of Carbon to Oxygen Atom Ratios for Incipient Soot Formation with C_2H_2 , C_2H_4 , and C_2H_6 Fuels," M.I.T. Fluid Mech. Lab. Publ. No. 71-3, 1971; *Combustion Science and Technology*, Vol. 3, pp. 255-263, 1971.
12. Heywood, J.B., Fay, J.A. and Linden, L.H., "Jet Aircraft Air Pollutant Production and Dispersion," AIAA paper 70-115, presented at 8th Aerospace Science Meeting, New York, NY, January 1970; *AIAA Journal*, Vol. 9, No. 5, pp. 841-850, 1971.
13. Tabaczynski, R.J., Heywood, J.B. and Keck, J.C., "Time-Resolved Measurements of Hydrocarbon Mass Flowrate in the Exhaust of a Spark-Ignition Engine," M.I.T. Fluid Mech. Lab. Publ. No. 71-10, 1971; SAE paper 720112, SAE Automotive Engineering Congress, January 10-14, 1972; *SAE Transactions*, Vol. 81, 1972.
14. Heywood, J.B., "How Clean a Car?," *Technology Review*, Vol. 73, No. 8, June, 1971.
15. Heywood, J.B., "Gas Turbine Combustor Modeling for Calculating Nitric Oxide Emissions," AIAA paper no. 71-712, presented at AIAA/SAE 7th Propulsion Joint Specialist Conference, Salt Lake City, Utah, June 14-18, 1971.
16. Mikus, T. and Heywood, J.B., "The Automotive Gas Turbine and Nitric Oxide Emissions," 1971 Intersociety Energy Conversion Engineering Conference, Boston, MA, August 3-6, 1971; *Combustion Science and Technology*, Vol. 4, pp. 149-158, 1971.
17. Radcliffe, S.W. and Appleton, J.P., "Soot Oxidation Rates in Gas Turbine Engines," M.I.T. Fluid Mech. Lab. Publ. No. 71-12, 1971; *Combustion Science and Technology*, Vol. 4, pp. 171-175, 1971.
18. Heywood, J.B. and Keck, J.C., "Formation of Hydrocarbons and Oxides of Nitrogen in Automobile Engines," presented at Conference on Science in the Control of Smog, Cal. Tech., November 15-16, 1971; *Environmental Science and Technology*, Vol. 7, pp. 216-233, 1973.
19. Pompei, F. and Heywood, J.B., "The Role of Mixing in Burner Generated Carbon Monoxide and Nitric Oxide," M.I.T. Fluid Mech. Lab. Publ. No. 72-2, 1972; *Combustion and Flame*, 19, pp. 407-418, 1972.
20. Overcamp, T.J. and Fay, J.A., "Dispersion of SST Trails in the Stratosphere," AIAA paper no. 72-650, presented at the AIAA 5th Fluid and Plasma Dynamics Conference, Boston, MA, June 26-28, 1972.
21. Appleton, J.P. and Heywood, J.B., "The Effects of Imperfect Fuel-Air Mixing/in a Burner on NO Formation from Nitrogen in the Air and the Fuel," *Proceedings of The 14th*

- Symposium (International) on Combustion, pp. 777-786, The Combustion Institute, 1973.
22. Park, C. and Appleton, J.P., "Shock-Tube Measurements of Soot Oxidation Rates," M.I.T. Fluid Mech. Lab. Publ. No. 72-8, 1972; *Combustion and Flame*, 20, 369-379, 1973.
 23. Appleton, J.P., "Soot Oxidation Kinetics at Combustion Temperatures," presented at the AGARD Propulsion and Energetics Panel 41st Meeting, London, England, April 9-13, 1973; AGARD Conference Preprint No. 125, "Atmospheric Pollution by Aircraft Engines," Paper 20.
 24. Heywood, J.B. and Mikus, T., "Parameters Controlling Nitric Oxide Emissions from Gas Turbine Combustors," presented at the AGARD Propulsion and Energetics panel 41st Meeting, London, England, April 9-13, 1973; AGARD Conference Preprint No. 125, "Atmospheric Pollution by Aircraft Engines," Paper 21.
 25. Komiyama, K. and Heywood, J.B., "Predicting NO_x Emissions and the Effects of Exhaust Gas Recycle in the Spark-Ignition Engines," SAE paper 730475, presented at SAE National Automobile Engineering Meeting, Detroit, MI, May 14-18, 1973; SAE Transactions, Vol. 82, 1973.
 26. Galant, S. and Appleton, J.P., "The Rate-Controlled Method of Constrained Equilibrium Applied to Chemically Reaction Open Systems," M.I.T. Fluid Mech. Lab. Publ. No. 73-6, 1973.
 27. Flagan, R.C., Galant, S. and Appleton, J.P., "Rate Constrained Partial Equilibrium Models for the Formation of Nitric Oxide from Organic Fuel Nitrogen," M.I.T. Fluid Mech. Lab. Publ. No. 73-7, 1973; *Combustion and Flame*, 22, pp. 299-311, 1974.
 28. Flagan, R.C. and Appleton, J.P., "A Stochastic Model of Turbulent Mixing with Chemical Reaction: Nitric Oxide Formation in a Plug Flow Burner," M.I.T. Fluid Mech. Lab. Publ. No. 73-10, 1973; *Combustion and Flame*, 23, pp. 249-268, 1974.
 29. Morr, A.R. and Heywood, J.B., "A Partial Equilibrium Model for Predicting Carbon Monoxide Concentrations in Steady Flow Combustion Systems," M.I.T. Fluid Mech. Lab. Publ. No. 73-11, 1973; *Astronautica Acta*, Vol. 1, pp. 949-966, 1974.
 30. Blizard, N.C. and Keck, J.C., "Experimental and Theoretical Investigation of Turbulent Burning Model for Internal Combustion Engines," SAE paper 740191, SAE Automotive Engineering Congress, February 25 - March 1, 1974; SAE Transactions, Vol. 83, 1974.
 31. Danieli, G., Ferguson, C., Heywood, J.B. and Keck, J.C., "Predicting the Emissions and Performance Characteristics of a Wankel Engine," SAE paper 740186, SAE Automotive Engineering Congress, February 25 - March 1, 1974; SAE Transactions, Vol. 83, 1974.

32. Heywood, J.B. and Martin, M.K., "Aggregate Emissions from the Automobile Population," SAE paper 740536, presented at SAE Fleet Week, June 17-21, 1974; SAE Transactions, Vol. 83, 1974.
33. Appel, D. and Appleton, J.P., "Shock Tube Studies of Deuterium and Oxidation by Atomic Resonance Absorption Spectrophotometry," M.I.T. Fluid Mech. Lab. Publ. No. 74-2, 1974, Proceedings of the 15th Symposium (International) on Combustion, pp. 701-716, The Combustion Institute, 1974.
34. Heywood, J.B., "Pollutant Formation and Control in Internal Combustion Engines," Proceedings of the 15th Symposium (International) on Combustion, pp. 1191-1212, The Combustion Institute, 1974.
35. Rife, J.M. and Heywood, J.B., "Photographic Performance Studies of Diesel Combustion with a Rapid Compression Machine," SAE paper 740948, presented at SAE International Automobiles Engineering and Manufacturing Meeting, October 21-25, 1974; SAE Transactions, Vol. 83, 1974.
36. Ferguson, C., Danieli, G., Heywood, J. and Keck, J., "Time Resolved Measurements of Exhaust Composition and Flow Rate in a Wankel Engine," SAE paper 750024, presented at SAE Automotive Engineering Congress and Exposition, February 24-28, 1975; SAE Transactions, Vol. 84, 1975.
37. Hicks, R.E., Probst, R.F. and Keck, J.C., "A Model of Quench Layer Entrainment During Blowdown and Exhaust of the Cylinder of an Internal Combustion Engine," SAE paper 750009, presented at SAE Automotive Engineering Congress and Exposition, February 24-28, 1975; SAE Transactions, Vol. 84, 1975.
38. Heywood, J.B., Jacoby, H.D., Linden, L.H., with the assistance of Mooney, P.D. and Rife, J.M., "The Role for Federal R & D on Alternative Automotive Power Systems," Energy Laboratory Report No. MIT-EL-74-013, November, 1974.
39. Grad, F.P., Rosenthal, A.J., Rockett, L.R., Fay, J.A., Heywood, J.B., Kain, J.F., Ingram, G.K., Harrison, Jr., and Tientenberg, T., The Automobile and the Regulation of Its Impact on the Environment, The University of Oklahoma Press, 1975.
40. Danieli, G.A., Ferguson, C.R., Heywood, J.B. and Keck, J.C., "Analysis of Performance Losses in a Wankel Engine," Paper C98-75, Proceedings of Conference on Combustion in Engines," Cranfield Institute of Technology, July, 1975, Institution of Mechanical Engineers.
41. Komiyama, K. Flagan, R.C. and Heywood, J.B., "The Effects of Droplets on Fuel-Air Mixing in a Burner," Paper 109, presented at 2nd European Symposium on Combustion, Orleans, France, September 1-5, 1975.
42. Morr, A.R., Heywood, J.B. and Fitch, A.H., "Measurements and Predictions of Carbon Monoxide Emissions from an Industrial Gas Turbine," Combustion Science and Technology, Vol. 11, pp. 97-109, 1975.

43. Heywood, J.B. and Tabaczynski, R.J., "A Review of the Effect of Engine Control Variables on SI Engine Fuel Economy and Emissions," presented at Department of Transportation Automobile Engine Control Workshop, July 8-9, 1975, U.S. Department of Transportation, Transportation Systems Center.
44. Heywood, J.B. and Linden, L.H., "Alternative Automotive Engine and Energy Conservation," presented at Forum on Energy and Transportation at the Society of Automotive Engineers Automobile Engineering and Manufacturing Meeting, October, 1975; published in Energy and Transportation, SAE SP-406, January, 1976.
45. Jain, B.C., Rife, J.M. and Keck, J.C., "A Performance Model for the Texaco Controlled Combustion Stratified Charge Engine," SAE paper 760116, presented at the Automotive Engineering Congress, February 23-27, 1976; SAE Transactions, Vol. 85, 1976.
46. Hires, S.D., Ekchian, A., Heywood, J.B., Tabaczynski, R.J. and Wall, J.C., "Performance and NO_x Emissions Modeling of a Jet Ignition Prechamber Stratified Charge Engine," SAE paper 760161, Automotive Engineering Congress, Detroit, February 23-27, 1976; SAE Transactions, Vol. 85, 1976.
47. Martin, M.K. and Heywood, J.B., "Approximate Relationships for the Thermodynamic Properties of Hydrocarbon-Air Combustion Products," Combustion Science and Technology, Vol. 15, pp. 1-10, 1977.
48. Linden, L.H., Heywood, J.B., Jacoby, H.D. and Margolis, H., "Federal Support for the Development of Alternative Automotive Power Systems. The General Issue and the Stirling, Diesel, and Electric Cases," Energy Laboratory Working Paper No. MIT-EL-76-001 WP, March, 1976.
49. Heywood, J.B., "Pollutant Formation and Control in Spark-Ignition Engines," Progress in Energy and Combustion Science, Vol. 1, pp. 135-164, 1976.
50. Heywood, J.B., "Modeling Combustion and Performance Characteristics of Internal Combustion Engines," invited paper presented at 1976 Heat Transfer and Fluid Mechanics Institute, University of California, Davis, June 21-23, 1976; Proceedings, pp. 180-195.
51. Heywood, J.B. and Tabaczynski, R.J., "Current Developments in Spark-Ignition Engines," SAE paper 760606, presented at the SAE National West Coast Meeting, August 9-12, 1976; published in A History of the Automotive Internal Combustion Engines, SP-409.
52. Komiyama, K., Flagan, R.C. and Heywood, J.B., "The Influence of Droplet Evaporation on Fuel-Air Mixing Rate in a Burner," Sixteenth Symposium (International) on Combustion, pp. 549-560, M.I.T., Cambridge, MA, August 16-20, 1976.

53. Prado, G., Lee, M.L., Hites, R.A., Hoult, D.P. and Howard, J.B., "Soot and Hydrocarbon Formation in a Turbulent Diffusion Flame," Proceedings of Sixteenth Symposium (International) on Combustion, pp. 649-661, The Combustion Institute, 1976.
54. Ferguson, C.R. and Keck, J.C., "On Laminar Flame Quenching and Its Application to Spark-Ignition Engines," Combustion and Flame, Vol. 28, pp. 197-205, 1977.
55. Tabaczynski, R.J., "Turbulence and Turbulent Combustion in Spark-Ignition Engines," Progress in Energy and Combustion Science, Vol. 2, pp. 143-165, 1976.
56. Tabaczynski, R.J., Ferguson, C.R. and Radhakrishnan, K., "A Turbulent Entrainment Model for Spark-Ignition Engine Combustion," SAE paper 770647, SAE Transactions, Vol. 86, Fuels and Lubricants Meeting, Tulsa, OK, June 7-9, 1977.
57. Ekchian, A., Heywood, J.B. and Rife, J.M., "Time Resolved Measurements of the Exhaust from a Jet Ignition Prechamber Stratified Charge Engine," SAE paper 770043, SAE Transactions, Vol. 86, International Automotive Engineering Congress and Exposition, February 28 - March 4, 1977.
58. LoRusso, J.A. and Tabaczynski, R.J., "Combustion and Emissions Characteristics of Methanol, Methanol-Water, and Gasoline-Methanol Blends in a Spark-Ignition Engine," SAE paper 769019, presented at Eleventh Intersociety Energy Conversion Engineering Conference, Lake Tahoe, NV, September 12-17, 1976; published in Conference Proceedings, pp. 122-132.
59. Donnely, R.G., Heywood, J.B., LoRusso, J., O'Brien, F., Reed, T.B. and Tabaczynski, R.J., "Methanol as an Automotive Fuel: A Summary of Research in the M.I.T. Energy Laboratory," Energy Laboratory Report No. MIT-EL-76-013, April 1976.
60. Heywood, J.B., Jacoby, H.D., Linden, L.H., Margolis, H., Iverach, D., Jacobs, E.A., Lerman, F. and Martin, M.K., "Regulating the Automobile," Energy Laboratory Report No. MIT-EL-77-007, Report to National Science Foundation, Division of Policy Research and Analysis, November, 1977.
61. Wall, J.C., Heywood, J.B. and Woods, W.A., "Parametric Studies Using a Cycle-Simulation Model on Performance and NO_x Emissions of the Prechamber Three-Valve Stratified Charge Engine," SAE paper 780320, 1978 SAE Congress and Exposition, Detroit, MI, February 27 - March 3, 1978; SAE Transactions, Vol. 87, 1978.
62. Danieli, G.A., Keck, J.C. and Heywood, J.B., "Experimental and Theoretical Analysis of Wankel Engine Performance," SAE paper 780416, 1978 SAE Congress and Exposition, Detroit, MI, February 27 - March 3, 1978.
63. Wong, V.W., Martin, M.K. and Rife, J.M., "Experiments in Stratified Combustion with a Rapid Compression Machine," SAE paper 780638, 1978 Passenger Car Meeting, Troy, MI, June 5-9, 1978; SAE Transactions, Vol. 87, 1978.

64. Mikus, T., Heywood, J.B. and Hicks, R.E., "Nitric Oxide Formation in Gas Turbine Engines: A Theoretical and Experimental Study," NASA Contractor Report 2977, April, 1978.
65. Ferguson, C. and Keck, J.C., "Hot-Wire Pyrometry," J. Appl. Phys., Vol. 49, No. 6, pp. 3031-3032, 1978.
66. Wall, J.C. and Heywood, J.B., "The Influence of Operating Variables and Prechamber Size on Combustion in a Prechamber Stratified-Charge Engine," SAE paper 780966, International Fuels & Lubricants Meeting, Toronto, Ontario, Canada, November, 1978.
67. Ferguson, C.R. and Keck, J.C., "Stand-Off Distances on a Flat Flame Burner," Combustion and Flame, Vol. 34, No. 1, pp. 85-98, 1979.
68. Ekchian, A. and Hoult, D.P., "Flow Visualization Study of the Intake Process of an Internal Combustion Engine," SAE paper 790095, SAE Congress & Exposition, Detroit, MI, February 26 - March 2, 1979; SAE Transactions, Vol. 88, 1979.
69. Heywood, J.B., Higgins, J.M., Watts, P.A. and Tabaczynski, R.J., "Development and Use of a Cycle Simulation to Predict SI Engine Efficiency and NO_x Emissions," SAE paper 790291, SAE Congress & Exposition, Detroit, MI, February 26 - March 2, 1979.
70. Wong, V.W. and Hoult, D.P., "Rapid Distortion Theory Applied to Turbulent Combustion," SAE paper 790357, SAE Congress & Exposition, Detroit, MI, February 26 - March 2, 1979; SAE Transactions, Vol. 88, 1979.
71. Keck, J.C., "Rate-Controlled Constrained Equilibrium Method for Treating Reactions in Complex Systems," Maximum Entropy Formalism, Editors: R.D. Levine and M. Tribus, Massachusetts Institute of Technology Press, Cambridge, MA, December, 1978.
72. Heywood, J.B. and Watts, P.A., "Parametric Studies of Fuel Consumption and NO Emissions of Dilute Spark-Ignition Engine Operation Using a Cycle Simulation," Paper C98/79, Proceedings of the Institution of Mechanical Engineers' Conference on Fuel Economy and Emissions of Lean Burn Engines, London, England, June 12-14, 1979.
73. Linden, L.H., Kumar, S. and Samuelson, P.R., "Issues in Federally Supported Research on Advanced Automotive Power Systems," Energy Laboratory Report No. MIT-EL-77-019, December 1977.

74. Heywood, J.B., "Engine Combustion Modeling--An Overview," presented at 1978 General Motors Research Laboratories Symposium on Combustion Modeling in Reciprocating Engines, Warren, MI, November 6-7, 1978; Combustion Modeling in Reciprocating Engines, Editors: J.N. Mattavi & C.A. Amann, pp. 1-35, Plenum Press, 1980.
75. Hoult, D.P. and Wong, V.W., "The Generation of Turbulence in an Internal Combustion Engine," presented at 1978 GMR Symposium on Combustion Modeling in Reciprocating Engines, Warren, MI, November 6-7, 1978; Combustion Modeling in Reciprocating Engines, Editors: J.N. Mattavi & C.A. Amann, pp. 131-155, Plenum Press, 1980.
76. Namazian, M., Hansen, S.P., Lyford-Pike, E.J., Sanchez-Barsse, J., Heywood, J.B. and Rife, J., "Schlieren Visualization of the Flow and Density Fields in the Cylinder of a Spark-Ignition Engine," SAE paper 800044, 1980 SAE Congress & Exposition, Detroit, MI, February 25-29, 1980; SAE Transactions, Vol. 89, 1980.
77. Hiraki, H. and Rife, J., "Performance and NO_x Model of a Direct-Injection Stratified Charge Engine," SAE paper 800050, 1980 SAE Congress & Exposition, Detroit, MI, February 25-29, 1980; SAE Transactions, Vol. 89, 1980.
78. Watts, P.A. and Heywood, J.B., "Simulation Studies of the Effects of Turbocharging and Reduced Heat Transfer on Spark-Ignition Engine Operation," SAE paper 800289, 1980 SAE Congress & Exposition, Detroit, MI, February 25-29, 1980.
79. Caton, J.A. and Heywood, J.B., "Models for Heat Transfer, Mixing and Hydrocarbon Oxidation in an Exhaust Port of a Spark-Ignition Engine," SAE paper 800290, 1980 SAE Congress & Exposition, Detroit, MI, February 25-29, 1980.
80. Blazowski, W.S., Sarofim, A.F. and Keck, J.C., "The Interrelationship Between Soot and Fuel NO_x Control in Gas Turbine Combustors," Paper no. 80-GT-76, presented at ASME 25th International Gas Turbine Conference, New Orleans, LA, March 9-13, 1980. *Jnl. Engineering for Power*, Vol. 103, No. 1, pp. 43-48, 1981.
81. Hoult, D.P. and Ekchian, A., "Soot formation in a Turbulent Swirl Stabilized Laboratory Combustor," Paper no. 80-GT-77, presented at ASME 25th International Gas Turbine Conference, New Orleans, LA, March 9-13, 1980. *Jnl. Engineering for Power*, Vol. 103, No. 1, pp. 49-53, 1981.
82. Beretta, G.P., Rashidi, M. and Keck, J.C., "Thermodynamic Analysis of Turbulent Combustion in a Spark-Ignition Engine. Experimental Evidence," 1980 Spring Meeting, Western States Section, The Combustion Institute, University of California, Irvine, CA, Paper no. 80-20, April 21-22, 1980.
83. Heywood, J.B., Keck, J.C. and Rife, J.M., "Hydrocarbon Formation and Oxidation in Spark-Ignition Engines," Vol. I: Summary, Energy Laboratory Report No. MIT-EL-80-003, January, 1980.

84. Heywood, J.B., Tabaczynski, R.J., Higgins, J.M. and Watts, P.A., "A Modeling Study of the Fuel Consumption and NO_x Emissions of Spark-Ignition Engines Over a Range of Design and Operating Conditions," prepared for the U.S. Department of Energy, Office of Transportation Programs, July, 1978, published March, 1979, No. HCP/M2881.
85. Radhakrishnan, K., Heywood, J.B. and Tabaczynski, R.J., "Premixing Quality and Flame Stability: A Theoretical and Experimental Study," NASA Contractor Report 3216, December, 1979.
86. Heywood, J.B., Fay, J.A. and Chigier, N.A., "Air Pollution from Aircraft," NASA Contractors Report CR-159712, October 1979.
87. Pope, S.B., "A Rational Method of Determining Probability in Turbulent Reacting Flows," J. Non-Equilib. Thermodyn., Vol. 4, pp. 309-320, 1979.
88. Metghalchi, M. and Keck, J.C., "Laminar Burning Velocity of Propane-Air Mixtures at High Temperature and Pressure," Combustion and Flame, Vol. 38, pp. 143-154, 1980.
89. Foster, D.E. and Keck, J.C., "Factors Affecting NO_x Formation from Nitrogen-Containing Fuels," Combustion and Flame, Vol. 38, pp. 199-209, 1980.
90. Rashidi, M., "Measurement of Flame Velocity and Entrained Velocity from High Speed Photographs in the SI Engine," The Institution of Mechanical Engineers, Proceedings, Vol. 194, No. 21, pp. 231-238, 1980.
91. Giovanetti, A., Houtt, D., Keck, J. and Sarofim, A., "Flame Luminosity and Unburned Hydrocarbon Measurements in Swirling Combustion: Topical Report," Report to the U.S. Department of Energy, Contract No. EX-76-A-01-2295, 41 pages, July 1980.
92. Pope, S.B., "A Monte Carlo Method for the PDF Equations of Turbulent Reactive Flow," Combustion Science and Technology, Vol. 25, pp. 159-174, 1981. Earlier Version: Pope, S.B., "A Monte Carlo Method for the PDF Equations of Turbulent Flow," M.I.T. Energy Laboratory Report, MIT-EL 80-012, 54 pages, February 1980.
93. Pope, S.B., "Monte Carlo Calculations of Premixed Turbulent Flames," Proceedings of the 18th International Symposium on Combustion, pp. 1001-1010, The Combustion Institute, 1981.
94. Mansouri, S.H. and Heywood, J.B., "Correlations for the Viscosity and Prandtl Number of Hydrocarbon-Air Combustion Products," Combustion Science and Technology, Vol. 23, pp. 251-256, 1980.
95. Heywood, J.B. and Wilkes, J., "Is There a Better Automobile Engine?," Technology Review, Vol. 83, No. 2, pp. 18-29, November/December, 1980.

96. Mendillo, J.V. and Heywood, J.B., "Hydrocarbon Oxidation in the Exhaust Port of a Spark-Ignition Engine," SAE paper 810019, SAE Congress & Exposition, Detroit, MI, February 23-27, 1981.
97. By, A., Kempinski, B. and Rife, J.M., "Knock in Spark-Ignition Engines," SAE paper 810147, SAE Congress & Exposition, Detroit, MI, February 23-27, 1981.
98. Sellnau, M.C., Springer, G.S. and Keck, J.C., "Measurements of Hydrocarbon Concentrations in the Exhaust Products from a Spherical Combustion Bomb," SAE paper 810148, SAE Congress & Exposition, Detroit, MI, February 23-27, 1981.
99. Weiss, P. and Keck, J.C., "Fast Sampling Valve Measurements of Hydrocarbons in the Cylinder of a CFR Engine," SAE paper 810149, SAE Congress & Exposition, Detroit, MI, February 23-27, 1981; SAE Transactions, Vol. 90.
100. Radhakrishnan, K. and Heywood, J.B., "Effects of Combustor Inlet Conditions on Flame Stability," *Combustion Science and Technology*, Vol. 24, pp. 165-178, 1981.
101. "An Experimental and Analytical Study of Heat Transfer in an Engine Exhaust Port," *International J. Heat Mass Transfer*, Vol. 24, No. 4, pp. 581-595, 1981.
102. Pope, S.B., "Transport Equation for the Joint Probability Density Function of Velocity and Scalars in Turbulent Flow," *The Physics of Fluid*, Vol. 24, No. 4, 1981.
103. Radhakrishnan, K., Heywood, J.B., and Tabaczynski, R.J., "Premixed Turbulent Flame Blowoff Velocity Correlation Based on Coherent Structures in Turbulent Flows," *Combustion & Flame*, Vol. 22, No. 1, pp. 19-33, 1981.
104. Keck, J.C., "Thermal Boundary Layer in a Gas Subject to a Time Dependent Pressure," *Letters in Heat and Mass Transfer*, Vol. 8, pp. 313-319, 1981.
105. Heywood, J.B., "Automotive Engines and Fuels: A Review of Future Options," *Progress in Energy and Combustion Science*, Vol. 7, pp. 155-184, 1981.
106. Mansouri, S.H., Heywood, J.B. and Radhakrishnan, K., "Divided-Chamber Diesel Engine, Part I: A Cycle-Simulation Which Predicts Performance and Emissions," SAE paper 820273, SAE International Congress and Exposition Meeting, February 22-26, 1982, in P. 107 Diesel Engine Combustion, Emissions and Particulates, P-107; SAE Transactions, Vol. 91, 1982.
107. Kort, R.T., Mansouri, S.H., Heywood, J.B. and Ekchian, A., "Divided-Chamber Diesel Engine, Part II: Experimental Validation of a Predictive Cycle-Simulation, and Heat Release Analysis," SAE paper 820274, SAE International Congress & Exposition Meeting, February 22-26, 1982; in Diesel Engine Combustion, Emissions and Particulates, SAE publication, P-107; SAE Transactions, Vol. 91, 1982.
108. Namazian, M. and Heywood, J.B., "Flow in the Piston-Cylinder-Ring Crevices of a Spark-Ignition Engine: Effect on Hydrocarbon Emissions, Efficiency and Power," SAE

- paper 820088, SAE International Congress & Exposition, Detroit, MI, February 22-26, 1982; SAE Transactions, Vol. 91, 1982.
109. Mogaka, Z.N., Wong, V.W. and Shahed, S.M., "The Performance and Regeneration Characteristics of a Cellular Ceramic Particulate Trap", SAE Paper 820272, SAE Transactions, Vol. 91, pp. 1078-1100, Society of Automotive Engineers Congress and Exposition, Detroit, MI, February, 1982.
 110. Giovanetti, A.J. and Rife, J.M., "Internal Ballistics Model for a Liquid Monopropellant Gun," Journal of Ballistics, Vol. 6, No. 1, pp. 1348-1373, 1982.
 111. Metghalchi, M. and Keck, J.C., "Burning Velocities of Mixtures of Air with Methanol, Isooctane, and Indolene at High Pressure and Temperature," Combustion & Flame, Vol. 48, pp. 191-210, 1982.
 112. Simpson, H.R.D., Andon, B.M., Thilly, W.G. and Rife, J.M., "Effect of Operating Conditions on the Particulates from a Single Cylinder Diesel Engine," SAE paper 830646, presented at the International Off-Highway Meeting & Exposition, Milwaukee, WI, September 13-16, 1982.
 113. Mansouri, S.H., Heywood, J.B. and Ekchian, J.A., "Studies of NO_x and Soot Emissions from an IDI Diesel Using an Engine Cycle Simulation," Paper C120/82, Diesel Engines for Passenger Cars and Light Duty Vehicles, Institution of Mechanical Engineers Conference Publication 1982-8, pp. 215-227, 1982.
 114. Poulos, S.G. and Heywood, J.B., "The Effect of Chamber Geometry on Spark-Ignition Engine Combustion," SAE paper 830334, SAE International Congress & Exposition, Detroit, MI, February 28 - March 4, SAE Transactions, Vol. 92, 1983.
 115. Giovanetti, A.J., Ekchian, J.A., Heywood, J.B. and Fort, E.F., "Analysis of Hydrocarbon Emissions Mechanisms in a Direct Injection Spark-Ignition Engine," SAE paper 830587, SAE International Congress & Exposition, Detroit, MI, February 28 - March 4, SAE Transactions, Vol. 92, 1983.
 116. Houpt, P.K. and Andreadakis, S.K., "Estimation of Fuel-Air Ratio from Cylinder Pressure in Spark Ignited Engines," SAE paper 830418, SAE International Congress & Exposition, Detroit, MI, February 28 - March 4, 1983.
 117. Sachdev, R., Wong, V.W. and Shahed, S.M. "Effect of Ash Accumulation on the Performance of Diesel Exhaust Particulate Traps" SAE paper 830182, SAE Transactions Vol. 92, presented at SAE Congress & Exposition, Detroit, MI, February, 1983.
 118. Shahed, S.M., Mogaka, Z.N., Sachdev R. and Wong, V.W. "A Technical Assessment of Heavy Duty Diesel Particulate Traps," APCA Paper # 83-484, presented at the 76th Annual Meeting of the Air Pollution Control Association, Atlanta, Georgia, June, 1983.

119. Keck, J.C., "Turbulent Flame Structure and Speed in Spark-Ignition Engines," Proceedings of Nineteenth Symposium (Int'l) on Combustion, The Combustion Institute, pp. 1451-1466, 1982.
120. Beretta, G.P. and Keck, J.C., "Energy and Entropy Balances in a Combustion Chamber: Analytical Solution," Combustion Science & Technology, Vol. 30, pp. 19-29, 1983.
121. Cheng, W.K., "Calculation of Turbulent Diffusion Flame Using the Correct Flame Sheet Model," AIAA, paper no. 83-1322, August 1983; AIAA Journal, November, 1984.
122. Beretta, G.P., Rashidi, M. and Keck, J.C., "Turbulent Flame Propagation and Combustion in Spark Ignition Engines," Combustion & Flame, Vol. 52, pp. 217-245, 1983.
123. Gatowski, J.A., Heywood, J.B. and Deleplace, C., "Flame Photographs in a Spark-Ignition Engine," Combustion & Flame, Vol. 56, pp. 71-81, 1984.
124. Beretta, G.P., "On the Relation Between Classical and Quantum-Thermodynamic Entropy," J. Math. Phys., 25, pp. 1507-1510, 1984.
125. Heywood, J.B., and Vilchis, F.R., "Comparison of Flame Development in a Spark-Ignition Engine Fueled with Propane and Hydrogen," Combustion Science & Technology, Vol. 38, pp. 313-324, 1984.
126. Sachdev, R., Wong, V.W. and Shahed, S.M. "Analysis of Regeneration Data for a Cellular Ceramic Particulate Trap," SAE Paper 840076, SAE Transactions, Vol. 93, presented at SAE Congress & Exposition, Detroit, MI, February, 1984.
127. Wong, V.W., Yu, M.L., Mogaka, Z.N. and Shahed, S.M. "Effects of Catalytic Wire-Mesh Traps on the Level and Measurement of Heavy-Duty Diesel Particulate Emissions," SAE Paper 840172, SAE Transactions, Vol. 93, SAE Congress & Exposition, Detroit, MI, February, 1984.
128. Heywood, J.B., "Combustion Chamber Design for Optimum Spark-Ignition Engine Performance," paper presented as a Keynote Address to the IAVD Congress on Future Trends in Vehicle and Component Design, held at the Palexpo, Geneva, February 22-24, 1984; Int. J. of Vehicle Design, Vol. 5, No. 3, pp. 336-357, 1984.
129. Gatowski, J.A., Balles, E.N., Chun, K.,M., Nelson, F.E., Ekchian, J.A. and Heywood, J.B., "Heat Release Analysis of Engine Pressure Data," SAE paper 841359, SAE International Fuels & Lubricants Meeting, October 8-11, SAE Trans., Vol. 93, 1984.
130. Balles, E.N., Ekchian, J.A. and Heywood, J.B., "Fuel Injection Characteristics and Combustion Behavior of a Direct Injection Stratified Charge Engine, SAE paper 841379, SAE International Fuels & Lubricants Meeting, October 8-11, SAE Trans., Vol. 93, 1984.

131. Hoult, D.P. and Izquierdo, A.J., "Methanol as a Soot Reducer in a Turbulent Swirling Burner," Paper No. JPGC-GT2 ASME/IEEE Joint Power Generation Conference, Toronto, October 1984, Published Mechanical Engineering (Abstract), ASME Trans., Journal of Engineering for Gas Turbines and Power (full text), Vol. 107, No. 3, pp. 734-738, July 1985.
132. Hoult, D.P., "Lubrication and Support of a Single Piston Ring," paper No. 84-AM-4D-2, ASLE Meeting, May 7-10, 1984, ASLE Trans. 28, 2, pp. 139-149, 1985.
133. Milton, B.E. and Keck, J.C., "Laminar Burning Velocities in Stoichiometric Hydrogen and Hydrogen-Hydrocarbon Gas Mixtures," Combustion & Flame, Vol. 58, pp. 13-22, 1984.
134. Cheng, W.K. and Bien, F., "Temperature Measurements Using CO Line Absorption at Different Vibrational Levels," AIAA Journal, Vol. 19, 8, 1981.
135. Cheng, W.K., Martinez Sanchez, M., Dvornik, D., "Surface Field Limitation in Diffused Anodic Discharge," Journal of Energy, Vol. 7, 6, Nov./Dec., 1983.
136. Cheng, W.K., "Ignition of Highly Preheated Fuel Jets," 1984 Fall Meeting, The Combustion Institute, Oct. 22-23, 1984, Stanford, CA.
137. Lyford-Pike, E.J. and Heywood, J.B., "Thermal Boundary Layer Thickness in the Cylinder of a Spark-Ignition Engine," Int. J. Heat Transfer, Vol. 27, No. 10, pp. 1873-1878, 1984.
138. Caton, J.A., Heywood, J.B. and Mendillo, J.V., "Hydrocarbon Oxidation in a Spark Ignition Engine Exhaust Port," Combustion Science & Technology, Vol. 37, Nos. 3 & 4, pp. 153-169, 1984.
139. Assanis, D.N., Ekchian, J.A., Heywood, J.B. and Replege, K.K., "Computer Simulation of the Heavy-Duty Turbo-Compounded Diesel Cycle for Studies of Engine Efficiency and Performance," DOE/NASA/0394-1, NASA CR-174755, U.S. Department of Energy, Conservation and Renewable Energy, Office of Vehicle and Engine R & D, May 1984.
140. Beretta, G.P., Gyftopoulos, E.P., Park, J.L. and Hatsopoulos, G.N., "Quantum Thermodynamics. A New Equation of Motion for a Single Constituent of Matter," Nuovo Cimento B., Vol. 82, pp. 169-191, 1984.
141. Ghoniem, A.F., Cheng, D.Y. and Oppenheim, A.K., "Formation and Inflammation of a Turbulent Jet," presented at the 22nd Aerospace Sciences Meeting, AIAA-84-0572, 1984.
142. Hsiao, C.C., Ghoniem, A.F., Chorin, A.J. and Oppenheim, A.K., "Numerical Simulation of a Turbulent Flame Stabilized Behind a Rearward-Facing Step," The 20th Symposium (International) on Combustion, Ann Arbor, MI, August 1984.
143. Ghoniem, A.F., "Dynamics of Flame Propagation in a Turbulent Field," Lectures in Applied Mathematics, 22, 1984.

144. Ghoniem, A.F. and Sethian, J.A., "Dynamics of Turbulent Structures in a Recirculating Flow; A Computational Study," for presentation at the 23rd Aerospace Sciences Meeting, AIAA-85-0146, 1984.
145. Ghoniem, A.F., "Analysis of Flame Deformation in a Turbulent Field; Effect of Reynolds Number on Burning Rates," AIAA paper no. 85-0140, AIAA 23rd Aerospace Sciences Meeting, Reno, Nevada, January 14-17, 1985.
146. Bedran, E.C., Beretta, G.P., "General Thermodynamic Analysis for Engine Combustion Modeling," SAE paper 850205, International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, SAE Trans., Vol. 95, 1985.
147. Rhodes, D.B. and Keck, J.C., "Laminar Burning Speed Measurements of Indolene-Air-Diluent Mixtures at High Pressures and Temperatures," SAE paper 850047, International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, SAE Trans., Vol. 95, 1985.
148. Walsh, G.J. and Cheng, W.K., "Effects of Highly-Heated Fuel on Diesel Combustion," SAE paper 850088, International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, 1985.
149. Beretta, G.P., "Entropy and Irreversibility for a Single Isolated Two Level System: New Individual Quantum States and New Nonlinear Equation of Motion," International Journal of Theoretical Physics, Vol. 24, No. 2, 1985.
150. Assanis, D.N., Ekchian, J.A., Heywood, J.B. and Replogle, K.K., "Computer Simulation of the Turbocompounded Diesel Engine System," Proceedings of the Twenty-Second Automotive Technology Development Contractors' Coordination Meeting, Dearborn, MI, Oct. 29 - Nov. 2, 1984.
151. Gatowski, J.A. and Heywood, J.B., "Effects of Valve-Shrouding and Squish on Combustion in a Spark-Ignition Engine," SAE paper 852093, International Fuels and Lubricants Meeting and Exposition, Tulsa, Oklahoma, Oct. 21-24, 1985.
152. Beretta, G.P., Gyftopoulos, E.P. and Park, J.L., "Quantum Thermodynamics. A New Equation of Motion for a General Quantum System," II Nuovo Cimento B, Vol. 87, pp. 77-97, 1985.
153. Ghoniem, A.F. and Sherman, F.S., "Grid-Free Simulation of Diffusion Using Random Walk Methods," Journal of Computational Physics, Vol. 61, No. 1, pp. 1-37, 1985.
154. Roberts, J.A., Norman, T.J., Ekchian, J.A. and Heywood, J.B., "Computer Models for Evaluating Premixed and Disc Wankel Engine Performance," SAE paper 860613, International Congress & Exposition, Detroit, MI, Feb. 24-28, SAE Trans., Vol. 95, 1986.
155. Assanis, D.N. and Heywood, J.B., "Development and Use of Computer Simulation of the Turbocompounded Diesel System for Engine Performance and Components Heat

- Transfer Studies," SAE paper 860329, International Congress & Exposition, Detroit, MI, Feb. 24-28, SAE Trans., Vol. 95, 1986.
156. Ghoniem, A.F. and Gagnon, Y., "Numerical Investigations of Recirculating Flow at Moderate Reynolds Numbers," Paper No. AIAA-86-0370, AIAA 24th Aerospace Science Meeting, Reno, Nevada, Jan. 6-9, 1986.
 157. Beretta, G.P., "A Theorem on Lyapunov Stability for Dynamical Systems and a Conjecture on a Property of Entropy," *Journal of Mathematical Physics*, Vol. 27, pp. 305-308, 1986.
 158. Hoult, D.P. and Hguyen, V.H., "A Turbulent Burning Law Derived from Combustion Experiments," *Proceedings of International Symposium on Diagnostics and Modeling of Combustion in Reciprocating Engines*, Tokyo, pp. 315-324, September 4-6, 1985.
 159. Tagalian, J. and Heywood, J.B., "Flame Initiation in a Spark-Ignition Engine," *Combustion & Flame*, Vol. 64, pp. 243-246, 1986.
 160. Assanis, D.N. and Heywood, J.B., "Predicting Performance Characteristics of the Low-Heat-Rejection Turbocompounded Diesel Engine Using a Computer Simulation," *Proceedings of the Institution of Mechanical Engineers, Conference on Turbocharging and Turbochargers*, London, England, May 6-8, 1986.
 161. Ghoniem, A.F. and Ng, K.K., "Effect of Harmonic Modulation on Rates of Entrainment in a Confined Shear Layer," AIAA-86-0056, AIAA 24th Aerospace Sciences Meeting, Reno, Nevada, January 6-9, 1986.
 162. Ghoniem, A.F., "Computational Methods in Turbulent Reacting Flow," *American Mathematical Society, 0075-8485/86, Lectures in Applied Mathematics*, Vol. 24, 1986.
 163. Ghoniem, A.F., "Effect of Large Scale Structures on Turbulent Flame Propagation," *Combustion & Flame*, Vol. 64, pp. 321-336, 1986.
 164. Cheng, W. and Gentry, R., "Effects on Charge Non-Uniformity on Diesel Heat Release Analysis," SAE paper 861568, Int'l Fuels & Lubricants Meeting & Exposition, Philadelphia, PA, Oct. 6-9, SAE Trans., Vol. 95, 1986.
 165. Beretta, G.P., "A New Approach to Constrained-Maximization Non-equilibrium Problems," *ASME, AES-Vol. 2-3, Computer-Aided Engineering of Energy Systems*, Vol. 3-Second Law Analysis and Modeling, The Winter Annual Meeting of ASME, Anaheim, CA, Dec. 7-12, 1986.
 166. Beretta, G.P. and Keck, J.C., "The Constrained-Equilibrium Approach to Nonequilibrium Dynamics," *ASME, AES-Vol. 2-3, Computer-Aided Engineering of Energy Systems*, Vol. 3-Second Law Analysis and Modeling, The Winter Annual Meeting of ASME, Anaheim, CA, Dec. 7-12, 1986.

167. Keck, J.C., Heywood, J.B. and Noske, G., "Early Flame Development and Burning Rates in Spark Ignition Engines," SAE paper 870164, the SAE International Congress & Exposition, Detroit, MI, February 23-27, SAE Trans., Vol. 96, 1987.
168. Collela, K.J., Balles, E.N., Ekchian, J.A., Cheng, W.K. and Heywood, J.B., "A Rapid Compression Machine Study of the Influence of Charge Temperature on Diesel Combustion, SAE paper 870587, the SAE International Congress & Exposition, Detroit, MI, February 23-27, 1987.
169. Sher, E. and Keck, J.C., "Spark Ignition of Combustible Gas Mixtures," Combustion and Flame, Vol. 66, pp. 17-25, 1986.
170. Ghoniem, A.F. and Knio, O.M., "Numerical Simulation of Flame Propagation in Constant Volume Chambers," the 21st Symposium (International) on Combustion, Munich, West Germany, August 1986.
171. Ghoniem, A.F. and Givi, P., "Vortex-Scalar Element Calculations of Diffusion Flame Stabilized on a Plane Mixing Layer," AIAA-87-0225, 25th AIAA Aerospace Sciences Meeting, Reno, Nevada, January 1987.
172. Ghoniem, A.F., Knio, O.M. and Aly, H.F., "Three Dimensional Vortex Simulation with Application to an Axisymmetric Shear Layer," AIAA-87-0379, 25th AIAA Aerospace Sciences Meeting, Reno, Nevada, January 1987.
173. Ghoniem, A.F. and Gagnon, Y., "Vortex Simulation of Laminar Recirculating Flow," J. Comput. Phys., 68, pp. 346-377, 1987.
174. Ghoniem, A.F. and Sethian, J.A., "Dynamics and Structure of Recirculating Flow," AIAA Journal, 25, 1, pp. 168-171, January 1987.
175. Ghoniem, A.F. and Ng, K.K., "Numerical Study of the Dynamics of a Forced Shear Layer," Phys. Fluids, 30, pp. 706-721, 1987.
176. Brown, A.J. and Heywood, J.B., "A Fundamentally-Based Stochastic Mixing Model Method for Predicting NO and Soot Emissions from Direct-Injection Diesel Engines," in Calculations of Turbulent Reactive Flows, pp. 293-312, AMD-Vol. 81, Winter Annual Meeting of the American Society of Mechanical Engineers, Anaheim, CA, December 7-12, 1986.
177. Lai, M.C., Zhou, B., Cheng, W.K., Wong, V.W. and Benedek, K., "Parametric Studies of Coal-Water Slurry Combustion in a Rapid Compression Machine," ASME paper 87-ICE-9, Energy Sources Technology Conference & Exhibition, Dallas, TX, February 15-20, 1987.
178. Theobald, M.A. and Cheng, W.K., "A Numerical Study of Diesel Ignition," ASME paper 87-FE-2, Automotive Engine Technology Symposium, Dallas, TX, February 15-20, 1987.

179. Ng, K.K. and Ghoniem, A.F., "Numerical Simulation of a Confined Shear Layer," Dynamics of Reactive Systems Part II, ed. Bowen, Leyer, and Soloukhin, in Prog. Astro. Aero. 105, pp. 18-49, 1986.
180. Heywood, J.B., "Fluid Motion Within the Cylinder of Internal Combustion Engines, The 1986 Freeman Scholar Lecture," Journal of Fluids Engineering, Vol. 109, pp. 3-35, March 1987.
181. Chun, K.M. and Heywood, J.B., "Estimating Heat-Release and Mass-of-Mixture Burned from Spark-Ignition Engine Pressure Data," Combust. Sci. and Tech., Vol. 54, 1-6, pp. 133-144, 1987.
182. Keck, J.C. and Hu, H., "Explosions of Adiabatically Compressed Gases in a Constant Volume Bomb," presented at the 21st International Symposium on Combustion, Munich, W. Germany, August 1986.
183. Hu, H. and Keck, J.C., "Autoignition of Adiabatically Compressed Combustible Gas Mixtures," SAE paper 872110, International Fuels & Lubricants Meeting, Toronto, Ontario, Canada, November 2-5, SAE Trans., Vol. 96, 1987.
184. Hoult, D.P., Hamiroune, D. and Keck, J.C., "Heat Transfer in the End Gas," SAE paper 870168, The SAE International Congress & Exposition, Detroit, MI, February 23-27, 1987.
185. Martins, L-P. and Ghoniem, A.F., "Vortex Simulation of the Induction and Compression Processes in an Engine Model," SAE paper 872102, International Fuels & Lubricants Meeting, Toronto, Ontario, Canada, November 2-5, 1987.
186. Najm, H.N. and Ghoniem, A.F., "Numerical Simulation of the Convective Instability in a Dump," AIAA-87-1874, The 23rd AIAA/ASME/ASEE Joint Propulsion Meeting, San Diego, CA, June 29 - July 2, 1987.
187. Ghoniem, A.F., Heidarinejad, G., and Krishnan, A., "Numerical Simulation of a Reacting Shear Layer Using the Transport Element Method," AIAA-87-1718, The 23rd AIAA/SAE/ASME/ASEE Joint Propulsion Meeting, La Jolla, CA, June 29 - July 1, 1987.
188. Assanis, D.N. and Heywood, J.B., "Simulation Studies of the Effects of Low-Heat-Rejection on Turbocompounded Diesel Engine Performance," Int. J. of Vehicle Design, Vol. 8, No. 3, 1987.
189. Balles, E.N. and Heywood, J.B., "Fuel-Air Mixing and Diesel Combustion in a Rapid Compression Machine," SAE paper 880206, SAE International Congress & Exposition, Detroit, MI, Feb. 29 - Mar. 4, SAE Trans., Vol. 97, 1988.
190. Pischinger, S. and Heywood, J.B., "A Study of Flame Development and Engine Performance with Breakdown Ignition Systems in a Visualization Engine," SAE paper

- 880518, SAE International Congress & Exposition, Detroit, MI, Feb. 29 - Mar. 4, SAE Trans., Vol. 97, 1988.
191. Ghoniem, A.F., Heidarinejad, G. and Krishnan, A., "On Mixing, Baroclinicity and the Effect of Strain in a Chemically-Reacting Shear Layer," AIAA paper 88-0729, AIAA 26th Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1988.
 192. Knio, O.M. and Ghoniem, A.F., "On the Formation of Streamwise Vorticity in Turbulent Shear Flows," AIAA paper 83-0728, AIAA 26th Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1988.
 193. Sethian, J.A. and Ghoniem, A.F., "Validation Study of Vortex Methods," Journal of Computational Physics, Vol. 74, No. 2, pp. 283-317, February 1988.
 194. Chun, K.M., Heywood, J.B. and Keck, J.C., "Prediction of Knock Occurrence in a Spark-Ignition Engine," Proceedings of the 22nd Symposium (International) on Combustion, The Combustion Institute, pp. 455-463, 1988.
 195. Law, R., Metghalchi, M. and Keck, J.C., "Rate-Controlled Constrained Equilibrium Calculation of Ignition Delay Times in Hydrogen-Oxygen Mixtures," Proceedings of the 22nd Symposium (International) on Combustion, The Combustion Institute, pp. 1705-1713, 1988.
 196. Ghoniem, A.F. and Krishnan, A., "Origin and Manifestation of Flow-Combustion Interactions in a Premixed Shear Layer," Proceedings of the 22nd Symposium (International) on Combustion, The Combustion Institute, pp. 665-675, 1988.
 197. Ghoniem, A.F., "Development and Application of Vortex Methods: A Review and Some Extensions," Proceedings of the AIAA/ASME/SIAM/APS, 1st National Fluid Dynamics Congress, Cincinnati, OH, Part 1, A Collection of Technical Papers, pp. 658-669, July 25-28, 1988.
 198. Chun, K.M. and Heywood, J.B., "Study of the Correlation Between Knock Occurrence and End-Gas State in a Spark-Ignition Engine," presented at The First KSME-JSME Thermal and Fluids Engineering Conference, Seoul, Korea, Nov. 1-3, 1988.
 199. Hoult, D.P., Lux, J.P., Wong, V.W. and Billian, S.A., "Calibration of Laser Fluorescence Measurements of Lubricant Film Thickness in Engines," SAE paper 881587, Int'l Fuels and Lubricants Meeting & Exposition, Portland, Oregon, Oct. 10-13, 1988, SAE Trans., Vol. 97, 1988.
 200. Ghoniem, A.F. and Givi, P., "Lagrangian Simulation of a Reacting Mixing Layer at Low Heat Release," AIAA Journal, Vol. 26, No. 6, pp. 690-697, 1988.
 201. Ghoniem, A.F., Heidarinejad, G. and Krishnan, A., "Numerical Simulation of a Thermally Stratified Shear Layer Using the Vortex Element Method," J. of Comput. Phys., 79, pp. 135-166, November 1988.

202. Ghoniem, A.F., Heidarinejad, G. and Krishnan, A., "Turbulence-Combustion Interactions in a Reacting Shear Layer," *Turbulent Reactive Flows*, ed. by Borghi and Murthy, *Lecture Notes in Engineering*, 40, New York, 1989, pp. 631-677.
203. Knio, O.M. and Ghoniem, A.F., "Numerical Study of a Three Dimensional Vortex Method," *J. Comput. Phys.* 86, pp. 75-106, January 1990.
204. Knio, O.M. and Ghoniem, A.F., "Three Dimensional Vortex Simulation of Entrainment Augmentation Due to Streamwise Structures," paper AIAA-89-0574, 27th Aerospace Sciences Meeting, Jan. 9-12, 1989, Reno, Nevada.
205. Krishnan, A. and Ghoniem, A.F., "Numerical Simulation of the Structure of a Heated Jet in a Cold Environment," paper AIAA-89-0573, 27th Aerospace Sciences Meeting, Jan. 9-12, 1989, Reno, Nevada.
206. Heidarinejad, G. and Ghoniem, A.F., "Vortex Simulation of the Reacting Shear Layer; Effects of Reynolds and Damkohler Number," *The 27th Aerospace Sciences Meeting*, Jan. 9-12, 1989, Reno, Nevada, AIAA paper 89-0573.
207. Boisclair, M.E., Houtt, D.P. and Wong, V.W., "Piston Ring Thermal Transient Effects on Lubricant Temperatures in Advanced Engines," ASME paper 89-ICE-2, Energy-Sources Technology Conference and Exhibition, Houston, TX, Jan. 22-25, 1989; *J. Engineering for Gas Turbines & Power*, ASME Trans., 111, pp. 543-552, July 1989.
208. Balles, E.N. and Heywood, J.B., "Spray and Flame Structure in Diesel Combustion," ASME Energy Sources Technology Conference, Houston, TX, Jan. 22-25, 1989; *Journal of Engineering for Gas Turbines & Power*, Trans. of the ASME, Vol. 111, pp. 451-457, 1989.
209. Patton, K.J., Nitschke, R.G. and Heywood, J.B., "Development and Evaluation of a Friction Model for Spark-Ignition Engines," SAE paper 890836, SAE International Congress & Exposition, Detroit, MI, Feb. 27 - Mar. 3, 1989; SAE Trans., Vol. 98, pp. 1441-1461, 1989.
210. Chun, K.M. and Heywood, J.B., "Characterization of Knock in a Spark-Ignition Engine," SAE paper 890156, SAE International Congress & Exposition, Detroit, MI, Feb. 27 - Mar. 3, 1989.
211. Cheng, W.K., Wong, V.W. and Gao, F., "Heat Transfer Measurement Comparisons in Insulated and Non-Insulated Diesel Engines," SAE paper 890570, SAE International Congress & Exposition, Detroit, MI, Feb. 27 - Mar. 3, in SAE Publication SP-785, SAE Trans., Vol. 98, 1989.
212. Pope, S.E. and Cheng, W.K., "Stochastic Flamelet Model of Turbulent Premixed Combustion," 22nd Symposium (International) on Combustion, The Combustion Institute, pp. 781-789, 1988.

213. Cheng, W.K., Galliot, F. and Collings, N., "On the Time Delay in Continuous In-Cylinder Sampling from IC Engines," SAE paper 890579, SAE International Congress & Exposition, Detroit, MI, Feb. 27 - Mar. 3, SAE Trans., Vol. 98, pp. 1083-1090, 1989.
214. Wolf, R.S. and Cheng, W.K., "Heat Transfer Characteristics of Impinging Diesel Sprays," SAE paper 890439, SAE International Congress & Exposition, Detroit, MI, Feb. 27 - Mar. 3, 1989.
215. Frank, R.M. and Heywood, J.B., "Combustion Characterization in a Direct-Injection Stratified-Charge Engine and Implications on Hydrocarbon Emissions," SAE paper 892058, SAE Fuels & Lubricants Meeting and Exposition, Baltimore, Maryland, Sept. 25-28, SAE Trans., Vol. 98, pp. 769-784, 1989.
216. Cowart, J.S., Keck, J.C., Heywood, J.B., Westbrook, C.K. and Pitz, W.J., "Comparison of Engine Knock Predictions Using a Fully-Detailed and a Reduced Chemical Kinetic Mechanism," presented at Western States Section Meeting of The Combustion Institute, Livermore, CA, Oct. 23-24, 1989.
217. Blair, W.L, Hoult, D.P. and Wong, V.W., "The Role of Piston Distortion on Lubrication in a Reciprocating Engine," presented at ASME Energy-sources Technology Conference and Exhibition, New Orleans, LA, Jan. 14-18, 1990; J. Engineering for Gas Turbines & Power, ASME Trans., 112, pp. 287-300, 1990.
218. Knio, O.M. and Ghoniem, A.F., "Vortex Simulation of Three-Dimensional Reacting Shear Layers," AIAA-90-0150, AIAA, 28th Aerospace Sciences Meeting, Reno, Nevada, Jan. 8-11, 1990.
219. Pischinger, S. and Heywood, J.B., "How Heat Losses to the Spark Plug Electrodes Affect Flame Kernel Development in an SI-Engine," SAE paper 900021, SAE International Congress & Exposition, Detroit, MI, Feb. 26 - Mar. 2, SAE Trans., Vol. 99, pp. 53-73, 1990.
220. Galliot, F., Cheng, W.K., Cheng, C-O., Sztenderowicz, M. and Heywood, J.B., "In-Cylinder Measurements of Residual Gas Concentration in a Spark Ignition Engine," SAE paper 900485, SAE International Congress & Exposition, Detroit, MI, Feb. 26 - Mar. 2, SAE Trans., Vol. 99, pp. 1144-1150, 1990.
221. Frank, R.M. and Heywood, J.B., "The Importance of Injection System Characteristics on Hydrocarbon Emissions from a Direct-Injection Stratified-Charge Engine," SAE paper 900609, SAE International Congress & Exposition, Detroit, MI, Feb. 26 - Mar. 2, SAE Trans., Vol. 99, pp. 1336-1347, 1990.
222. Park, P. and Keck, J., "Rapid Compression Machine Measurements of Ignition Delay Times for PRD Mixtures," SAE paper 900027, SAE International Congress & Exposition, Detroit, MI, Feb. 26 - Mar. 2, SAE Trans., Vol. 99, pp. 11-23, 1990.
223. Keck, J.A., "Rate-Controlled Constrained-Equilibrium Theory of Chemical Reactions in Complex Systems," Prof. Energy Combust. Sci., Vol. 16, pp. 125-154, 1990.

224. Lux, J.P. and Hault, D.P., "Lubricant Film Thickness Measurements in a Diesel Engine Piston Ring Zone," STLE Preprint No. 90-AM-1H-1, STLE 45th Annual Meeting, Denver, CO, May 7-10, 1990.
225. Sztenderowicz, M.L. and Heywood, J.B., "Mixture Nonuniformity Effects on SI Engine Combustion Variability," SAE paper 902142, SAE International Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 22-25, SAE Trans., Vol. 99, pp. 2272-2290, 1990.
226. Sztenderowicz, M.L. and Heywood, J.B., "Cycle-to-Cycle IMEP Fluctuations in a Stoichiometrically-Fueled SI Engine at Low Speed and Load," SAE paper 902143, SAE International Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 22-25, SAE Trans., Vol. 99, pp. 2291-2309, 1990.
227. Frank, R.M. and Heywood, J.B., "The Effect of Fuel Characteristics on Combustion in a Spark-Ignited Direct-Injection Engine," SAE paper 902063, SAE International Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 22-25, 1990.
228. Heywood, J.B., "Future Engine Technology: Lessons from the 80s for the 1990s," ASME, 1990 Soichiro Honda Lecturer, ASME Conference on "New Technology in Large Bore Engines," IL, Oct. 7-10, 1990; Journal of Engineering for Gas Turbines and Power, Vol. 113, No. 3, pp. 319-330, July 1991.
229. Shiga, S, Heywood, J.B. and Chun, K.M., "Variation of Knocking Characteristics with the Chamber Wall Temperature in a Spark-Ignition Engine," (in Japanese), Journal of the Japan Society of Mechanical Engineers (Series B), Vol. 56, No. 530, Oct. 1990.
230. Cheng, W.K., Lai, M-C. and Chue, T-H., "Multi-Dimensional Modeling of Gas Turbine Combustion Using a Flame Sheet Model in KIVA II," AIAA paper 91-0414, AIAA 29th Aerospace Sciences Meeting, Jan. 7-10, 1991, Reno, Nevada.
231. Ghoniem, A.F. and Heidarinejad, G., "Effect of Two-Dimensional Shear Layer Dynamics on Mixing and Combustion at Low Heat Release," Combust. Sci. and Tech., Vol. 72, pp. 79-99, 1990.
232. Knio, O.M. and Ghoniem, A.F., "Numerical Study of a Three-Dimensional Vortex Method," J. Comput. Phys., 86, pp. 75-106, 1990.
233. Ghoniem, A.F. and Heidarinejad, G., "Effect of Damkohler Number on the Reaction Zone in a Reacting Shear Layer," Combust. Flame, 83, pp. 1-17, 1991.
234. Ghoniem, A.F. and Heidarinejad, G., "Numerical Study of Scalar Mixing and Product Formation in a Shear Layer," Combust. Sci. Tech., 73, pp. 70-99, 1990.
235. Ghoniem, A.F., "Vortex Simulation of Reacting Shear Flow," Chapter 10 in Numerical Approaches to Combustion Modeling, ed. by E. Oran and J. Boris, Progress in Astronautics & Aeronautics, Vol. 135, pp. 305-348, 1991.

236. Ghoniem, A.F., Knio, O.M. and Krishnan, A., "Lagrangian Simulation of the Early Stages of a Reacting Jet," AIAA-90-0150, The 23rd Symposium (International) on Combustion, Orleans, France, pp. 699-705, The Combustion Institute, 1990.
237. Pischinger, S. and Heywood, J.B., "A Model for Flame Kernel Development in a Spark-Ignition Engine," The 23rd Symposium (International) on Combustion, Orleans, France, pp. 1033-1040, The Combustion Institute, July 1990.
238. Martins, L-F. and Ghoniem, A.F., "Simulation of the Nonreacting Flow in a Bluff-Body Burner; Effect of the Diameter Ratio," ASME Winter Annual Meeting, Dallas, TX, Nov. 25-30, 1990, appeared in Heat and Mass Transfer in Fires and Combustion Systems, ed. by W.L. Grosshandler and H.G. Semerjian, HDT-Vol. 148, ASME Publications; JFE, Transactions of the ASME, Vol. 115, pp. 474-484, September 1993.
239. Ghoniem, A.F., Knio, O.M. and Soteriou, M., "Effect of Variable Density on Mixing and Combustion in Turbulent Shear Flow," AIAA-91-0081, 29th AIAA Aero-sciences Meeting, Reno, NV, January 1991.
240. Ghoniem, A.F. and Martins, L-F., "Effect of the Velocity Ratio on the Wake Flow Behind an Axisymmetric Bluff-Body," AIAA-91-0580, 29th AIAA Sciences Meeting, Reno, NV, January 1991.
241. Kaplan, J.A. and Heywood, J.B., "Modeling the Spark Ignition Engine Warm-Up Process to Predict Component Temperatures and Hydrocarbon Emissions," SAE paper 910302, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, SAE Trans., Vol. 100, 1991.
242. Valtadoros, T.H., Wong, V.W. and Heywood, J.B., "Engine Knock Characteristics at the Audible Detection Level," SAE paper 910567, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, 1991.
243. Frank, R.M. and Heywood, J.B., "The Effect of Piston Temperature on Hydrocarbon Emissions from a Spark-Ignited Direct-Injection Engine," SAE paper 910558, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, SAE Trans., Vol. 100, 1991.
244. Cheng, W.K. and Diringer, J.A., "Numerical Modeling of SI Engine Combustion with a Flame Sheet Model," SAE paper 910268, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, SAE Trans., Vol. 100, 1991.
245. Wong, V.W. and Hault, D.P., "Experimental Survey of Lubricant-Film Characteristics and Oil Consumption in a Small Diesel Engine," SAE paper 910741, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, 1991; SAE Transactions, Vol. 100, 1991, Journal of Fuels and Lubricants, Vol. 100-4, pp. 282-295, 1991.

246. Hoult, D.P., Wong, V.W. and Azzola, J.H., "Direct Observation of the Friction Reduction of Multigrade Lubricants," SAE paper 910742, SAE International Congress & Exposition, Detroit, MI, Feb. 25 - Mar. 1, 1991.
247. Pischinger, S. and Heywood, J.B., "How the Spark Plug Affects Cyclic Combustion Variations in an S.I. Engine," *MTZ Motortechnische Zeitschrift*, 52, 2, pp. 82-92, 1991.
248. Lai, M-C., Chue, T-H. and Cheng, W.K., "Spray Combustion Modeling Using a Flame Sheet Model," paper no. 91-40, Spring Meeting-Technical Program, Western States Section, The Combustion Institute, Boulder, CO, 1991.
249. Weiss, M.A. and Heywood, J.B., "Energy and the Environment: A Framework for Evaluating Research Needs in the Transportation Sector," Proceedings of the Conference held at MIT, Energy and the Environment in the 21st Century, Mar. 26-28, 1990, pp. 285-289, MIT Press, 1991.
250. Valtadoros, T.H., Wong, V.W. and Heywood, J.B., "Fuel Additive Effects on Deposit Build-Up and Engine Operating Characteristics," ACS Preprints, Vol. 36, No. 1, Symposium on Fuel Composition/Deposit Formation Tendencies, Division of Petroleum Chemistry, American Chemical Society, Atlanta, April 14-19, 1991.
251. Cowart, J.S., Keck, J.C., Heywood, J.B., Westbrook, C.K. and Pitz, W.J., "Engine Knock Predictions Using a Fully-Detailed and a Reduced Chemical Kinetic Mechanism," The 23rd Symposium (International) on Combustion, Orleans, France, pp. 1055-1062, The Combustion Institute, July 1990.
252. Hoult, D.P. and Takiguchi, M., "Calibration of the Laser Fluorescence Technique Compared with Quantum Theory," ASME/STLE Tribology Conference, Toronto, Ontario, Canada, Oct. 8-10, 1990, Tribology Transactions, Vol. 34, 3, pp. 440-444, 1991.
253. Martins, L.-F. and Ghoniem, A.F., "Vortex Simulation of the Intake Flow in a Planar Piston-Chamber Device," *Int. J. for Num. Meth. in Fluids*, 12, pp. 237-260, 1991.
254. Cheng, C-O., Cheng, W.K., Heywood, J.B., Maroteaux, D. and Collings, N., "Intake Port Phenomena in a Spark-Ignition Engine at Part Load," SAE paper 912401, 1991 SAE International Fuels & Lubricants Meeting & Exposition, Toronto, Canada, Oct. 7-10, SAE Trans., Vol. 100, 1991.
255. Bianco, Y., Cheng, W.K. and Heywood, J.B., "The Effects of Initial Flame Kernel Condition on Flame Development in SI Engine," SAE paper 912402, SAE International Fuels & Lubricants Meeting & Exposition, Toronto, Ontario, Canada, Oct. 7-10, SAE Trans., Vol. 100, 1991.
256. Hoult, D.P. and Wong, V.W., "Characteristics of Thin Films of Liquid Lubricants in High Temperature Engines," Proceedings of the Coatings for Advanced Heat Engines Workshop, U.S. Dept. of Energy, Maine Maritime Academy, Castine, Maine, August 6-9, 1990, Session III-Applied Tribology.

257. Hoult, D.P., "Can Engine Effects be Separated from Lubricant Effects?" *Lubrication Science*, Vol. 3, pp. 281-287, July 1991.
258. Shaw II, B.T., Hoult, D.P., and Wong, V.W., "Development of Engine Lubricant Film Thickness Diagnostics Using Fiber Optics and Laser Fluorescence," SAE paper 920651, SAE International Congress & Exposition, Detroit, MI, Feb. 24-28, SAE Trans., Vol. 101, 1992.
259. Knio, O.M. and Ghoniem, A.F., "Vortex Simulation of a Three-Dimensional Reacting Shear Layer with Infinite-Rate Kinetics," Vol. 30, *AIAA Journal*, pp. 105-113, January 1992.
260. Krishnan, A. and Ghoniem, A., "Simulation of Rollup and Mixing in the Rayleigh-Taylor Flow Using the Transport-Element Method," *J. of Computational Physics*, Vol. 99, pp. 1-27, March 1992.
261. Sher, E., Heywood, J.B. and Hacoheh, J., "Heat Transfer to the Electrodes a Possible Explanation of Misfire in SI-Engines," *Combust. Sci. and Tech.*, Vol. 83, pp. 323-325, 1992.
262. Tamura, T. and Hochgreb, S., "Chemical Kinetic Modeling of the Oxidation of Unburned Hydrocarbons," SAE paper 922235, SAE International Fuels and Lubricants Meeting & Exposition, San Francisco, CA, October 19-22, 1992.
263. Fox, J.W., Min, K-D., Cheng, W.K., and Heywood, J.B., "Mixture Preparation in a SI Engine with Port Fuel Injection During Starting and Warm-Up," SAE paper 922170, SAE International Fuels and Lubricants Meeting & Exposition, San Francisco, CA, October 10-22, SAE Trans., Vol. 101, 1992.
264. Brussovansky, S., Heywood, J.B., and Keck, J.C., "Predicting the Effects of Air and Coolant Temperature, Deposits, Spark Timing and Speed on Knock in Spark Ignition Engine," SAE paper 922324, SAE International Fuels and Lubricants Meeting, San Francisco, CA, October 19-22, SAE Trans., Vol. 101, 1992.
265. Ghoniem, A.F. and Krishnan, A., "Vorticity-Combustion Interactions in a Turbulent Reacting Jet," *Dynamics of Deflagration and Reactive Systems: Flames*. Published in *Progress in Astronautics and Aeronautics*, 131, ed. by Kuhl, Leyer, Borisov and Sirignano, pp. 237-256, 1991.
266. Ghoniem, A.F., Knio, O.M. and Heidarinejad, G., "The Structure of the Reaction Zone in a Reacting Shear Layer," *Dynamics of Deflagration and Reactive Systems: Flames*, *Progress in Astronautics and Aeronautics*, 131, ed. by Kuhl, Leyer, Borisov and Sirignano, pp. 220-236, 1991.
267. Knio, O.M. and Ghoniem, A.F., "Three-Dimensional Vortex Simulation of Roll-Up and Entrainment in a Shear Layer," *J. Comput. Phys.*, 97, pp. 172-223, Nov. 1991.

268. Ghoniem, A.F., "Numerical Simulation of Turbulent Combustion Using Vortex Methods," Fluid Mechanical Aspects of Combustion, ed. by M. Onofre and A. Resei, Pitman, pp. 305-326, 1991.
269. Najm, H. and Ghoniem, A.F., "Modeling Pulsating Combustion Due to the Flow-Flame Interactions in Vortex Stabilized Pre-Mixed Flames," Combust. Sci. and Tech., Vol. 94, pp. 259-278, 1993.
270. Soteriou, M.C., Knio, O.M., Ghoniem, A.F. and Cetegen, B.M., "Simulation of Flow-Combustion Interactions in a Spatially Developing Mixing Layer," presented at 30th Aerospace Sciences Meeting and Exhibit, Jan. 6-9, 1992, Reno, Nevada, AIAA-92-0081.
271. Ghoniem, A.F. and Knio, O.M., "The Development and Application of the Transport Element Method to 3D Reacting Shear Layers," in Vortex Dynamics and Vortex Methods, ed. by C.R. Anderson and C. Greengard. Lectures in Applied Mathematics, Vol. 28, pp. 165-218, 1991.
272. Ghoniem, A.F., Soteriou, M.C. and Knio, O.M., "Effect of Steady and Periodic Strain on Unsteady Flamelet Combustion," Proceedings of the 24th Symposium (International) on Combustion, July 5-10, 1992, Sydney, Australia, The Combustion Institute, Pittsburgh, PA, Jan. 1993.
273. Knio, O.M. and Ghoniem, A.F., "The Three-Dimensional Structure of Periodic Vorticity Layers Under Non-Symmetric Conditions," J. Fluid Mech., Vol. 243, pp. 353-392, 1992.
274. Ghoniem, A.F., Zhang, X., Knio, O.M., Baum, H.R. and Rehm, R.G., "Dispersion and Deposition of Smoke Plumes Generated in Massive Fires," J. of Hazardous Materials, 33, 275-293, Elsevier Science Publishers, 1993.
275. Hochgreb, S. and Dryer, F.L., "A Comprehensive Study on CH₂O Oxidation Kinetics," Combustion and Flame, 91, 257-284, 1992.
276. Hochgreb, S. and Dryer, F.L., "The Unimolecular Decomposition of 1,3,5-Tioxane," Journal of Physical Chemistry, 96, 295, 1992.
277. von Ruden, M.S., Cheng, W.K. and Heywood, J.B., "Diesel Engine Operating in a Partially Premixed Mode," ASME Journal, 93-ICE-23, presented at the Energy-Sources Technology Conference & Exhibition, Houston, TX, Jan. 31-Feb. 4, 1993.
278. Fox, J.W., Cheng, W.K. and Heywood, J.B., "A Model for Predicting Residual Gas Fraction in Spark-Ignition Engines," SAE paper 931025, SAE International Congress and Exposition, Detroit, MI, March 1-5, SAE Trans., Vol. 102, 1993.
279. Hoult, D.P. and Shaw II, B.T., "The Puddle Theory of Oil Consumption," The Society of Tribologists and Lubrication Engineers, presented at the 48th STLE Annual Meeting, Calgary, Alberta, Canada, May 17-20, 1993; Tribology Trans., Vol. 37, No. 1, 1994.

280. Calvert, J.G., Heywood, J.B., Sawyer, R.F. and Seinfeld, J.H., "Achieving Acceptable Air Quality: Some Reflections on Controlling Vehicle Emissions," Science, Reprint Series, Vol. 261, pp. 37-45, July 2, 1993.
281. Cheng, W.K., Hamrin, D., Heywood, J.B., Hochgreb, S., Min, K, and Norris, M., "An Overview of Hydrocarbon Emissions Mechanisms in Spark-Ignition Engines," SAE paper 932708, presented at the SAE Fuels and Lubricants Meeting and Exposition, Philadelphia, PA, October 18-21, SAE Trans., Vol. 102, 1993.
282. Cheung, H.M., and Heywood, J.B., "Evaluation of a One-Zone Burn-Rate Analysis Procedure Using Production SI Engine Pressure Data," SAE paper 932749, presented at the SAE Fuels and Lubricants Meeting and Exposition, Philadelphia, PA, October 18-21, SAE Trans., Vol. 102, 1993.
283. Lee, D., Hochgreb, S., and Keck, J.C., "Autoignition of Alcohols and Ethers in a Rapid Compression Machine," SAE paper 932755, presented at the SAE Fuels and Lubricants Meeting and Exposition, Philadelphia, PA, October 18-21, 1993.
284. Knio, O.M., and Ghoniem, A.F., "Stability Analysis of Differentially-Heated Asymmetric Vorticity Layers," J.T. Beal et al. (eds), *Vortex Flows and Related Numerical Methods*," 341-372, Kluwer Academic Publishers, 1993.
285. Zhang, X. and Ghoniem, A.F., "A Computational Model for the Rise and Dispersion of Wind-blown, Buoyancy-Driven Plumes-Neutrally Stratified Atmosphere," *Atmospheric Environment*, Vol. 27A, No. 15, pp. 2295-2311, 1993.
286. Hinze, P.C., and Cheng, W.K., "Flame Kernel Development in a Methanol Fueled Engine," SAE paper 932649, presented at the SAE Fuels and Lubricants Meeting and Exposition, Philadelphia, PA, October 18-21, SAE Trans., Vol. 102, 1993.
287. Hoult, D.P., and Azzola, J.H., "The Possible Role of Surface Tension in the Reduction of Top Ring Drag," SAE paper 932781, presented at the SAE Fuels and Lubricants Meeting and Exposition, Philadelphia, PA, October 18-21, SAE Trans., Vol. 102, 1993; published in Tribological Insights and Performance Characteristics of Modern Engine Lubricants, SAE Publication #SP-996, 1993.
288. Ghoniem, A.F. and Martins, L.-F., "Effect of Velocity Ratio on Bluffbody Flow Dynamics," *AIAA J.*, Vol. 30, No. 8, pp. 2166-2168, 1992.
289. Knio, O.M., Shi, X., and Ghoniem, A.F., "Lagrangian Simulation of Flamelet Combustion," AIAA paper 93-0247, 31st Aerospace Sciences Meeting & Exhibit, Reno, NE, January 11-14, 1993.
290. Petrov, C.A. and Ghoniem, A.F., "An Unsteady Strained Flame Model for Turbulent Combustion Simulations," 32nd Aerospace Sciences Meeting, Reno, NV, 1994. AIAA-94-0776.

291. Soteriou, M.C. and Ghoniem, A.F., "Dynamics of Reacting Shear Flows; Effects of Exothermicity and Forcing," 32nd Aerospace Sciences Meeting, Reno, NV, 1994. AIAA-94-0777.
292. Fox, J.W., Heywood, J.B. and McRae, G.J., "Aggregate Vehicle Emission Estimates for Evaluating Control Strategies," reprinted from: Global Emission Technology and Analysis (SP-1043), SAE paper 940303, SAE Int'l Congress & Exposition, Detroit, MI, Feb. 28-Mar. 3, 1994.
293. Min, K., Cheng, W.K. and Heywood, J.B., "The Effects of Crevices on the Engine-Out Hydrocarbon Emissions in SI Engines," SAE paper 940306, SAE Int'l Congress & Exposition, Detroit, MI, Feb. 28-Mar. 3; SAE Trans., Vol. 103, Sec. 3, 1994.
294. Wong, V.W., Tian, T., Lang, H., Ryan, J.P., Sekiya, Y., Kobayashi, Y., and Aoyama, A., "A Numerical Model of Piston Secondary Motion and Piston Slap in Partially Flooded Elastohydrodynamic Skirt Lubrication," SAE paper 940696, presented at SAE International Congress and Exposition, Detroit, MI, Feb., 28-Mar. 3; SAE Trans., Vol. 103, Sec. 3, 1994; published in New Developments in Engine Design Component Technology, SAE Publication #SP-1017, 1994.
295. Ryan, J.P., Wong, V.W., Lyon, R.H., Hoult, D.P., Sekiya, Y., Kobayashi, Y., and Aoyama, S., "Engine Experiments on the Effects of Design and Operational Parameters on Piston Secondary Motion and Piston Slap," SAE paper 940695, presented at SAE International Congress & Exposition, Detroit, MI, Feb. 28-Mar. 3; SAE Trans., Vol. 103, Sec. 3, 1994; published in New Developments in Engine Design and Engine Component Technology, SAE Publication #SP-1017, 1994.
296. Min, K., and Cheng, W.K., "In-Cylinder Oxidation of Piston-Crevice Hydrocarbon in SI Engines," The Third International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines, July 11-14, Yokohama, Japan, COMODIA 94, pgs. 125-130, 1994.
297. Heywood, J.B., "Combustion and Its Modeling in Spark-Ignition Engines," The Third International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines, July 11-14, Yokohama, Japan, COMODIA 94, pgs. 1-15, 1994.
298. Salvat, O.P., Cheng, A.S., Cheng, W.K., and Heywood, J.B., "Flame Shape Determination Using an Optical-Fiber Spark Plug and a Head-Gasket Ionization Probe," SAE paper 941987, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20; SAE Trans., Vol. 103, Sec. 4, 1994.
299. Shin, Y., Cheng, W.K., and Heywood, J.B., "Liquid Gasoline Behavior in the Engine-Cylinder of a SI Engine," SAE paper 941872, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20; SAE Trans., Vol. 103, Sec. 4, 1994.

300. Chen, K.C., DeWitte, K., and Cheng, W.K., "A Species-Based Multi-Component Volatility Model for Gasoline," SAE paper 941877, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20, 1994.
301. Norris, M., and Hochgreb, S., "Novel Experiment on In-Cylinder Desorption of Fuel from Oil Layer," SAE paper 941963, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20, 1994.
302. Cheng, W.K., Hochgreb, S., Norris, M., and Wu, K.C., "Auto-Oil Phase II Heavy Hydrocarbon Study: Analysis of Engine-Out Hydrocarbon Emissions Data," SAE paper 941966, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20; SAE Trans., Vol. 103, Sec. 4, 1994.
303. Cheng, W.K., Hochgreb, S., Norris, M., and Wu, K.C., "Auto-Oil Program Phase II Heavy Hydrocarbon Study: Fuel Species Oxidation Chemistry and its Relationship to the Auto-Oil Data," SAE paper 941970, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20; SAE Trans., Vol. 103, Sec. 4, 1994.
304. Shen, H., Hinze, P.C., and Heywood, J.B., "A Model for Flame Initiation and Early Development in SI Engines and its Application to Cycle-to-Cycle Variations," SAE paper 942049, presented at the SAE Fuels and Lubricants Meeting and Exposition, Baltimore, Maryland, Oct. 17-20, SAE Trans., Vol. 103, Sec. 4, 1994.
305. Martins, L.-F., and Ghoniem, A.F., "Simulation of the Nonreacting Flow in a Bluff-Body Burner; Effect of the Diameter Ratio," J. Fluids Engrg., V. 415, pp. 474-484, September 1993.
306. Soteriou, M.C. and Ghoniem, A.F., "The Vorticity Dynamics of an Exothermic, Spatially Developing, Forced, Reacting Shear Layer," presented at the Twenty-Fifth Symposium (International) on Combustion, The Combustion Institute, pp. 1265-1272, 1994.
307. Drobot, K., Cheng, W.K., Trinker, F., Kaiser, E.W., Siegl, W.O., Cotton, D.F., and Underwood, J., "Hydrocarbon Oxidation in the Exhaust Port and Runner of a Spark Ignition Engine," Combustion and Flame, Vol. 99, No. 2, November 1994.
308. Zhang, X., and Ghoniem, A.F., "A Computational Model for the Rise and Dispersion of Wind-Blown, Buoyancy-Driven Plumes-II. Linearly Stratified Atmosphere," Atmospheric Environment, Vol. 28, No. 18, pp. 3005-3018, 1994.
309. Zhang, X., and Ghoniem, A.F., "A Computational Model for the Rise and Dispersion of Wind-Blown, Buoyancy-Driven Plumes-III. Penetration of Atmospheric Inversion," Atmospheric Environment, Vol. 28, No. 18, pp. 3019-3032, 1994.
310. Najm, H.N., and Ghoniem, A.F., "Coupling Between Vorticity and Pressure Oscillations in Combustion Instability," J. of Propulsion and Power, Vol. 10, No. 6, pp. 769-776, Dec. 1994.

311. Petrov, C.A., and Ghoniem, A.F., "An Unsteady Strained Flame Model with Multi-Step Chemical Kinetics for Turbulent Combustion Simulations," AIAA paper 95-0380, 33rd Aerospace Sciences Meeting & Exhibit, Reno, NE, January 9-12, 1995.
312. Soteriou, M.C., and Ghoniem, A.F., "The Effect of the Inlet Boundary Condition on the Mixing and Burning in an Exothermic Shear Flow," AIAA paper 95-0807, 33rd Aerospace Sciences Meeting & Exhibit, Reno, NE, January 9-12, 1995.
313. Luu, V.C., and Ghoniem, A.F., "Simulation of the Reacting Field in an Axisymmetric Bluff-Body Combustor Using the Vortex-Scalar Element Method-An Isothermal, Fast-Chemistry Model," AIAA paper 95-0808, 33rd Aerospace Sciences Meeting & Exhibit, Reno, NE, January 9-12, 1995.
314. Kaiser, E., Siegl, W.O., Trinker, F.H., Cotton, D.F., Cheng, W.K., and Drobot, K., "Effect of Engine Operating Parameters on Hydrocarbon Oxidation in the Exhaust Port and Runner of a Spark Ignition Engine," SAE paper 950159, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, 1995.
315. Hamrin, D.A., and Heywood, J.B., "Modeling of Engine-Out Hydrocarbon Emissions for Prototype Production Engines," SAE paper 950984, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, 1995.
316. Sampson, M.J., and Heywood, J.B., "Analysis of Fuel Behavior in the Spark-Ignition Engine Start-Up Process," SAE paper 950678, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, SAE Trans., Vol. 104, 1995.
317. Hadjiconstantinou, N.G., and Heywood, J.B., "A Model for Converting SI Engine Flame Arrival Signals into Flame Contours," reprinted from Engine Combustion and Flow Diagnostics (SP-1090), SAE paper 950109, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, SAE Trans., Vol. 104, 1995.
318. Chen, K-C., Dewitte, K., and Cheng, W.K., "Fuel Effects and Enrichment Effects on Engine Starting and Warm-Up Behavior," reprinted from: Progress in Fuel Systems to Meet New Fuel Economy and Emissions Standards (SP-1084), SAE paper 950065, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, 1995.
319. Wong, V.W., Bauer, W., Kamo, R., Bryzik, W., and Reid, M., "Assessment of Thin Thermal Barrier Coatings for I.C. Engines," SAE paper 950980, presented at the SAE International Congress & Exposition, Detroit, MI, February 27 - March 2, SAE Trans., Vol. 104, 1995.
320. Wu, K-C., Hochgreb, S., and Norris, M.G., "Chemical Kinetic Modeling of Exhaust Hydrocarbon Oxidation," *Combustion and Flame*, 100, 193-201, 1995.
321. Min, K. and Cheng, W.K., "Oxidation of the Piston Crevice Hydrocarbon During the Expansion Process in a Spark Ignition Engine," *Combust. Sci. and Tech.*, Vol. 106, pp. 307-326, 1995.

322. Kravchik, T., Sher, E., and Heywood, J.B., "From Spark Ignition to Flame Initiation," *Combust. Sci and Tech.*, Vol. 108, pp. 1-30, 1995.
323. Shin, Y., Min, K., and Cheng, W.K., "Visualization of Mixture Preparation in a Port Fuel Injection Engine During Engine Warm-Up," SAE paper 952481, presented at the SAE Fuels & Lubricants Meeting & Exposition, Toronto, Ontario, Canada, Oct. 16-19, 1995.
324. Dearlove, J. and Cheng, W.K., "Simultaneous Piston Ring Friction and Oil Film Thickness Measurements in a Reciprocating Test Rig," SAE paper 952470, reprinted from presented at the SAE Fuels & Lubricants Meeting & Exposition, Toronto, Ontario, Canada, Oct. 16-19, 1995.
325. Petrov, C.A. and Ghoniem, A.F., "The Transient Response of Strained Laminar-Premixed Flames," *Combust. Flame*, 102: 401-417, June 1995.
326. Soteriou, M. and Ghoniem, A.F., "Effects of the Free-Stream Density Ratio on Free and Forced Spatially-Developing Shear Layers," *Phys. Fluids*, pp. 2036-2051, August 1995.
327. Soteriou, M.C. and Ghoniem, A.F., "On the Application of the Infinite Reaction Rate Model in the Simulation of the Dynamics of Exothermic Mixing Layers," *Combust. Sci. Tech.*, pp. 377-397, August 1995.
328. Annaswamy, A. and Ghoniem, A.F., "Active Control in Combustion Systems," *Control Systems*, IEEE Control Systems Society, Issue on Emerging Technologies," 15:6, 49-63, December 1995.
329. Linna, J.R. and Hochgreb, S., "Analytical Scaling Model for Hydrocarbon Emissions from Fuel Absorption in Oil Layers in Spark Ignition Engines", *Combust. Sci. Tech.*, Vol. 109, pp. 205-226, 1995.
330. Bazbauers, G. and Hochgreb, S., "Experimental Investigation of Low Damkohler Number Turbulent Reactions", *Proceedings of the Eight International Symposium on Transport Phenomena in Combustion*, San Francisco, Taylor and Francis, Pubs., July 1995.
331. Norris, M.G. and Hochgreb, S., "Hydrocarbon Desorption from Lubricant Oil Layers in Spark Ignition Engines, *Proceedings of the Eight International Symposium on Transport Phenomena in Combustion*, San Francisco, Taylor and Francis, Pubs., July 1995.
332. Lee, D. and Hochgreb, S., "Measurements and Modeling of Heat Transfer in a Rapid Compression Machine", *Proceedings of the Eight International Symposium on Transport Phenomena in Combustion*, San Francisco, Taylor and Francis, Pubs., July 1995.
333. VanDerWege, Bush, Hochgreb, S., Linteris, "Effect of CF_3H and C_2F_6 on CH_4 on Laminar Diffusion Flames at Normal & Microgravity," presented at the Third International Microgravity Combustion Workshop, Cleveland, OH, April 11-13, 1995.

334. Laurence, R.B., Wong, V.W., and Brown, A.J., "Effects of Lubrication System Parameters on Diesel Particulate Emissions Characteristics," SAE paper 960318, Reprinted from: Investigations into Diesel Engine Combustion Processes, (SP-1159), SAE International Congress & Exposition, Detroit, MI, February 26-29, 1996.
335. Kayes, D., and Hochgreb, S., "Development of a Time and Space Resolved Sampling Probe Diagnostic for Engine Exhaust Hydrocarbons," SAE paper 961002, Reprinted from: Engine Emissions and Emissions Measurement, (SP-1161), SAE International Congress & Exposition, Detroit, MI, February 26-29, 1996.
336. Norris, M., and Hochgreb, S., "Extent of Oxidation of Hydrocarbons Desorbing from the Lubricant Oil Layer in Spark-Ignition Engines," SAE paper 960069, Reprinted from: Engine Emissions and Emissions Measurement (SP-1161), presented at the SAE International Congress & Exposition, Detroit, MI, February 26-29, 1996.
337. Heywood, J.B., "Motor Vehicle Emissions Control: Past Achievements, Future Prospects," IMechE Combustion Engine Group Prestige Lecture, presented in London, May 21, 1996.
338. Frottier, V., Heywood, J.B., and Hochgreb, S., "Measurement of Gasoline Absorption into Engine Lubricating Oil," SAE paper 961229, Reprinted from: Engine and Gear Lubricants (SP-1183), presented at the International Spring Fuels & Lubricants Meeting, Dearborn, MI, May 6-8, 1996.
334. Shen, H., Hinze, P.C., and Heywood, J.B., "A Study of Cycle-to-Cycle Variations in SI Engines Using a Modified Quasi-Dimensional Model," SAE paper 961187, Reprinted from: Modeling Techniques in SI and CI Engines (SP-1178), presented at the SAE International Spring Fuels & Lubricants Meeting, Dearborn, MI, May 6-8, 1996.
339. Bauer, W., Heywood, J.B., Avanesian, O., and Chu, D., "Flow Characteristics in Intake Port of Spark Ignition Engine Investigated by CFD and Transient Gas Temperature Measurement," SAE paper 961997, presented at the SAE Fuels and Lubricants Meeting, San Antonio, TX, Oct. 17-19, 1996.
340. Heywood, J.B., "Advances in IC Engine Design for Controlling Emissions, "US-Japan Workshop on Heat Transfer, San Francisco, July 1995. Published in "Thermal Engineering for Global Environmental Protection," edited by S. Sengupta and T. Sano, Begell House, Inc., 1996.
341. Tian, T., Noordzij, L.B., Wong, V.W., and Heywood, J.B., "Modeling Piston-Ring Dynamics, Blowby, and Ring-Twist Effects," presented at the ICE Division of ASME 1996 Fall Technical Conference, Fairborn, OH, October 20-23, 1996; ASME Transactions, Journal of Engineering for Gas Turbines and Power, Vol. 120, no. 4, pp. 843-854, 1996.
342. Tian, T., Wong, V.W., and Heywood, J.B., "A Piston Ring-Pack Film Thickness and Friction Model for Multigrade Oils and Rough Surfaces," SAE paper no. 962032,

- presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition," San Antonio, TX, October 14-17, 1996; SAE Transactions, Journal of Fuels and Lubricants, Vol. 105, Section 4, pp. 1783-1795, 1996.
343. Min, K. and Cheng, W.K. "Oil Layer as Source of Hydrocarbon Emissions in SI Engine," presented at the ICE Division of ASME 1996 Fall Technical Conference, Fairborn, Ohio, October 20-23, 1996; Journal of Engineering for Gas Turbines and Power, Vol 120, pp. 669-677, July 1998.
 344. Chen, K.C., Cheng, W.K., Van Doren, J.M., Murphy III, J.P., Hargus, M.D., McSweeney, S.A., "Time-Resolved Speciated Emissions From an SI Engine During Starting and Warm-up," SAE Paper 961955, presented at the SAE International Fuels & Lubricants Meeting & Exposition, San Antonio, TX, October 14-17, 1996.
 345. Norris, M.G., Bauer, W., and Hochgreb, S., "Oxidation of Hydrocarbons from Lubricant Oil Layers in Spark-Ignition Engines", presented at the 26th Symposium on Combustion, 1996.
 346. Wu, K., Hochgreb, S., and Lee, G.R., "One-Dimensional Modeling of Hydrocarbon Oxidation Processes in Spark-Ignition Engines", presented at the Third Workshop on Modeling of Chemical Reaction Systems, Heidelberg, July 24-26, 1996.
 347. O'Brien, C.J., Hochgreb, S., Rabinovitch, A., Bromberg, L., Cohn, D.R., "Hydrogen Production via Plasma Reformers", IECEC '96 Proceedings, Washington D. C., August 11-16, 1996.
 348. Froelund, K., Schramm, J., Tian, T., Wong, V., Hochgreb, S., "Analysis of the Piston Ring/Liner Oil Film Development during Warm-up for an SI-Engine, ICE-Vol. 27-2, 1996 ASME Fall Technical Conference, Vol. 2, pp. 67-80, Fairborn, Ohio, Oct. 1996, ASME Transactions, Journal of Engineering for Gas Turbines and Power.
 349. Haidar, H., Heywood, J.B., Hochgreb, S., "Combustion Chamber Deposit Effects on Engine HC Emissions," Symposium on the Mechanism of Combustion Chamber Deposits, 211th National Meeting, American Chemical Society, March 24-29, 1996. Also published in Combustion and Emission Formation in SI Engines, Number SP-1300, published October 13, 1997.
 350. Wu, K.C. and Hochgreb, S., "Chemical Kinetic Simulation of Hydrocarbon Oxidation Through the Exhaust Port of a Spark Ignition Engine," Combustion and Flame, 107: pp. 383-400, 1996.
 351. Zhang, Z. and Ghoniem, A.F., "Transport Element Method for Axisymmetric Variable-density Flow and its Application to the Spread and Dispersion of a Dense Cloud," Proceedings of the 2nd Int. Workshop on Vortex Flows and Related Numerical Methods, Montreal, Canada, August 1995.

352. Gharakhani, A. and Ghoniem, A.F., "3D Vortex Simulation of Intake Flow in a Port-Cylinder with a Valve Seat and a Moving Piston," SAE paper 961195, the SAE International Spring Fuels & Lubricants Meeting, Dearborn, MI, May, 1996.
353. Ghoniem, A.F., Lakkis, I., and Soteriou, M., "Numerical Simulation of the Dynamics of Large Fire Plumes and the Phenomenon of Puffing," presented at the Twenty-Sixth Symposium (International) on Combustion, The Combustion Institute, Napoli, Italy, July-August, 1996.
354. Gharakhani, A., and Ghoniem, A.F., "Vortex Simulation of the Three-Dimensional Wake Behind a Cube," AIAA 96-0170, the 34th Aerospace Sciences Meeting, Reno, Nevada, January, 1996.
355. Soteriou, M.C., Knio, O.M., Ghoniem, A.F. and Cetegen, B.M., "Simulation of Flow-Combustion Interactions in a Spatially Developing Mixing Layer," in Dynamics of Exothermicity, Vol. 2, pp. 97-116 Gordon and Breach Publishers, 1996 (preliminary paper presented at the 30th Aerospace Science Meeting and Exhibit, January, 1992, Reno, Nevada, AIAA-92-0081).
356. Gharakhani, A. and Ghoniem, A.F., "3D Vortex Simulation of Intake Flow in an Off Centered Port and Cylinder with a Moving Piston," ASME J. Fluids Eng., vol. 120, pp. 319-326, June 1998.
357. Annaswamy, A.M., Fleifil, M., Hathout, J.P., and Ghoniem, A.F., "Impact of Linear Coupling on the Design of Active Controllers for the Thermoacoustic Instability," Combustion, Science and Technology, 128, 1-6, p. 131, 1997.
358. Petrov, C., and Ghoniem, A.F., "An Uniform Strain Model of Elemental Flame for Turbulent Combustion Simulation," Combust. Flame, 1997.
359. Fleifil, M., Annaswamy, A.M., Ghoniem, Z.A., and Ghoniem, A.F., "Response of a Laminar Premixed Flame to Flow Oscillations: A Kinematic Model and Thermoacoustic Instability Results," Comb. and Flame, 106, pp. 487-510, 1996.
360. Ghoniem, A.F., and Saghbini, J., "Numerical Simulation of the Dynamics and Mixing in a Swirling Flow" the 35th Aerospace Science Meeting and Exhibit, Reno, Nevada, January, 1997, AIAA-97-0507.
361. Ghoniem, A.F., and Petrov, C., "Numerical Simulation of Reacting Flows with Multi-Step Kinetics" presented at the 35th Aerospace Science Meeting and Exhibit, Reno, Nevada, January, 1997, AIAA-97-0291).
362. Gharakahani, A., and Ghoniem, A.F., "Toward a Grid-Free Simulation of Flow in Engines," Proceedings of the 1997 ASME Fluids Engineering Annual Summer Meeting, Vancouver, Canada, 1997, FEDSM97-3025, pp. 1-11.

363. Wu, K-C. and Hochgreb, S., "Numerical Simulation of Post-Flame Oxidation of Hydrocarbons in Spark Ignition Engines," SAE paper 970886, presented at the SAE International Congress & Exposition, Detroit, MI, February 24-27, 1997.
364. Tian, T., Rabute, R., Wong, V.W., and Heywood, J.B., "Effects of Piston-Ring Dynamics on Ring/Groove Wear and Oil Consumption in a Diesel Engine," SAE paper 970835, presented at the SAE International Congress & Exposition, Detroit, MI, February 24-27, 1997; SAE Transactions, Journal of Engine, Vol. 106, pp. 1195-1207, 1997. Also published in Development of New Diesel Engines and Components Design, Number SP-1245, published February 24, 1997.
365. Meyer, R. and Heywood, J.B., "Liquid Fuel Transport Mechanisms into the Cylinder of a Firing Port-Injected SI Engine During Start-Up," SAE paper 970865, presented at the SAE International Congress & Exposition, Detroit, MI, February 24-27, 1997.
366. Bossert, J.C., Shin, Y., and Cheng, W.K., "Fuel Effects on Throttle Transients in PFI Spark Ignition Engines," SAE paper 971613, presented at the SAE International Spring Fuels & Lubricants Meeting, Dearborn, MI, May 5-8, 1997.
367. Frolund, K., Schramm, J., Noordzij, B., Tian, T., and Wong, V., "An Investigation of the Cylinder Wall Oil Film Development During Warm-Up of an SI-Engine Using Laser Induced Fluorescence," SAE paper 971699, presented at the SAE International Spring Fuels & Lubricants Meeting, Dearborn, MI, May 5-8, 1997.
368. Hathout, J.P., Fleifil, M., Annaswamy, A.M. and Ghoniem, A.F., "Why do Second Peaks Appear in Experimental Active Controllers of Thermoacoustic Instability," for presentation at the 33rd. AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Seattle, WA, July 6-7, 1997, AIAA-97-2834.
369. Annaswamy, A.M., El-Rifai, O.M., Fleifil, M., Hathout, J.P., and Ghoniem, A.F., "A Model-Based, Self-Tuning Controller for Thermoacoustic Instability," Combustion, Science and Technology, vol. 135, 1-6, p. 213, 1998.
370. Ghoniem, A.F., Hathout, J.P., Fleifer, M. and Annaswamy, A.M., "Analysis and Design of Active Control of Thermoacoustic Instability using a Model Based Approach," for presentation at the IEEE Conference on Control Applications, East Hartford, CT, Sept. 1997.
371. Fleifel, M., Hathout, J.P., Annaswamy, A.M., and Ghoniem, A.F., "The Origin of Secondary Peaks with Active Control of Thermoacoustic Instability," Combustion, Science and Technology, vol. 133, 4-6, p. 227, 1998.
372. Hathout, J.P., Annaswamy, A.M., Fleifel, M. and Ghoniem, A.F., "A Model-Based Active Control Design for Thermoacoustic Instability," Combustion, Science and Technology, vol. 132, 1-6, p. 99, 1998.

373. Rumsey, J.W., Fleifel, M., Annaswamy, A.M., Hathout, J.P., and Ghoniem, A.F., "The Role of Active Control in Suppressing Thermoacoustic Instability: Theory to Practice," for presentation at the IEEE Conf. on Control Application, East Hartford, CT, Sept. 1997.
374. Haidar, H.A., and Heywood, J.B., "Combustion Chamber Deposit Effects on Hydrocarbon Emissions from a Spark-Ignition Engine," SAE paper 972887, presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 13-16, SAE Trans., vol. 106, 1997.
375. Shin, Y., and Cheng, W.K., "Engine-Out 'Dry' Particular Matters Emissions from SI Engines," SAE paper 972890, presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 13-16, 1997.
376. Linna, J.R., Malberg, H., Bennett, P.J., Palmer, P.J., Tian, T., and Cheng, W.K., "Contribution of Oil Layer Mechanisms to the Hydrocarbon Emissions from Spark-Ignition Engines," SAE paper 972892, presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 13-16, 1997.
377. Bauer, W.D., Tam, C., and Heywood, J.B., "Fast Gas Temperature Measurement by Velocity of Sound for IC Engine Applications," SAE paper 972826, presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 13-16, 1997. Also published in Engine Diagnostics, Number SP-1301, published October 13, 1997.
378. Bauer, W.D., Heywood, J.B., Balun, P., and Gronniger, S., "Heat Transfer and Mixture Vaporization in Intake Port of Spark Ignition Engine," SAE paper 972983, presented at the SAE International Fall Fuels & Lubricants Meeting & Exposition, Tulsa, OK, Oct. 13-16, 1997. Also published in Preparing Mixtures for Diesel and SI Engines, Number SP-1305, published October 13, 1997.
379. Hadjiconstantinou, N., Min, K., and Heywood, J.B., "Relation Between Flame Propagation Characteristics and Hydrocarbon Emissions Under Lean Operating Conditions in Spark-Ignition Engines," presented at the 26th Symposium on Combustion, Naples, Italy, 1996.
380. Bauer, W.D., and Heywood, J.B., "Transfer Function of Thin-Film Heat Flux Sensor," Experimental Heat Transfer, 10:181-190, 1997.
381. Kayes, D., and Hochgreb, S., "Time, Space, and Species Resolved Measurements of Engine-Out Hydrocarbon Emissions from Spark-Ignited Engines," Combust., Sci. and Tech., vol. 127, pp. 333-362, 1997.
382. Gharakhani, A. and Ghoniem, A.F., "Vortex Simulation of Unsteady Incompressible Flow in Complex Geometries," Comput. Phys., 134, 1, pp. 75-95, 1997.
383. Annaswamy, A.M., Fleifel, M., Hathout, J.P. and Ghoniem, A.F., "Impact of Linear Coupling on the Design of Active Controllers for the Thermoacoustic Instability," Combust. Sci. Tech., 128, p. 131, 1997.

384. Gharakhani, A., and Ghoniem, A.F., "BEM Solution of the 3D Interval Neumann Problem and a Regularized Formulation for the Potential Velocity Gradients," *Int. J. for Number Methods in Fluids*, 124:81-100, 1997.
385. Wu, K-C., and Hochgreb, S., "The Roles of Chemistry and Diffusion on Hydrocarbon Post-Flame Oxidation," *Comb. Sci. and Tech.*, vol. 130, pp. 365-398, 1997.
386. Ghoniem, A.F., Hathout, J.P., Fleifel, M., and Annaswamy, A.M., "Analysis and Design of Active Control of Thermoacoustic Instability Using a Model Based Approach," for the IEEE Conference on Control Applications, East Hartford, CT, September 1997.
387. Rumsey, J.W., Fleifel, M., Annaswamy, A.M., Hathout, J.P., and Ghoniem, A.F., "The Role of Active Control in Suppressing Thermoacoustic Instability: Theory to Practice," presented at the IEEE Conference on Control Application, East Hartford, CT, September 1997.
388. Lee, D. and Hochgreb, S., "Hydrogen Autoignition at Pressures above the Second Explosion Limit (0.6-4.0 MPa)," *International Journal of Chemical Kinetics*, Vol. 30, Issue 06, 1998.
389. Hinze, P.C. and Cheng, W.K., "Effects of Charge Composition on SI Engine Cyclic Variations at Idle," Fourth International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines (COMODIA 98), Kyoto, Japan, July 1998.
390. Wong, V.W., Stewart, M., Lundholm, G., and Hoglund, A., "Increased Power Density Via Variable Compression/Displacement and Turbocharging Using the Alvar-Cycle Engine," SAE paper 981027, presented at the SAE International Congress & Exposition, Detroit, MI, February 23-26, 1998.
391. Han, S., and Cheng, W.K., "Design and Demonstration of a Spark-Ignition Engine Operating in a Stratified-EGR Mode," SAE paper 980122, presented at the SAE International Congress & Exposition, Detroit, MI, February 23-26, 1998.
392. Cheng, W.K., Summers, T., and Collings, N., "The Fast-Response Flame Ionization Detector," *Prog. Energy Combust. Sci.*, vol. 24, pp. 89-124, 1998.
393. Heywood, J.B., "Motor Vehicle Emissions Control: Past Achievements, Future Prospects," Chapter 1, pp. 3-23, in *Handbook of Air Pollution from Internal Combustion Engines*, edited by Sher, E., Academic Press, 1998; based on the British Institution of Mechanical Engineers, Combustion Engine Group's Prestige Lecture, London, May 21, 1996 and on the Institution's George Stephenson Centennial International Lecture, November 1997 in Hong Kong, Kuala Lumpur, Singapore, Australia, and New Zealand, Academic Press, 1998.
394. Hochgreb, S., "Combustion-Related Emissions in SI Engines," Chapter 6, pp. 118-170, in *Handbook of Air Pollution from Internal Combustion Engines*, edited by Sher, E., Academic Press, 1998.

395. Lee, D. and Hochgreb, S., "Rapid Compression Machines: Heat Transfer and Suppression of Corner Vortex," *Combustion and Flame*, 114, pp. 531-545, 1998.
396. VanDerWege, B., and Hochgreb, S., "The Effect of Fuel Volatility on Sprays from High-Pressure Swirl Injectors," presented at The Twenty-Seventh International Symposium on Combustion, University of Colorado at Boulder, Publication No. 2E08, August 2-7, 1998.
397. Casey, S.M., Tamai, G., and Wong, V.W., "Effects of Engine Operating Conditions on Oil Film Thickness and Distribution along the Piston/Ring/Liner Interface in a Reciprocating Engine," presented at the ASME Fall Technical Conference, Clymer, NY, ICE-Vol. 31-2, Sept. 27-30, 1998.
398. Tian, T., and Wong, V.W., "Modeling the Lubrication, Dynamics, and Effects of Piston Dynamic Tilt of Twin-Land Oil Control Rings in Internal Combustion Engines," presented at the ASME Fall Technical Conference, Clymer, NY, ICE-Vol. 31-2, September 27-30, 1998. Published in *Advances in Powertrain Tribology*, Number SP-1390, Published October 19, 1998. Also ASME Transaction, *Journal of Engineering for Gas Turbines and Power*, Vol. 122, pp. 119-129, January 2000.
399. Akinyemi, O.C., and Cheng, W.K., "A Flame Sheet Model for NO Production in Diesel Combustion Simulation," SAE paper 982586, presented at the SAE International Fall Fuels and Lubricants Meeting and Exposition, San Francisco, CA, October 19-22, 1998.
400. Thirouard, B., Tian, T., and Hart, D.P., "Investigation of Oil Transport Mechanisms in the Piston Ring Pack of a Single Cylinder Diesel Engine, Using Two Dimensional Laser Induced Fluorescence," SAE paper 982658, presented at the SAE International Fuels and Lubricants Meeting and Exposition, San Francisco, CA, Oct. 19-22, 1998; SAE Transactions, *Journal of Fuels and Lubricants*, Vol. 107, pp. 2007-2015, 1998.
401. Tian, T., Wong, V.W., and Heywood, J.B., "Modeling the Dynamics and Lubrication of Three Piece Oil Control Rings in Internal Combustion Engines," SAE paper 982657, presented at the SAE International Fuels and Lubricants Meeting and Exposition, San Francisco, CA, Oct. 19-22, SAE Trans., Vol. 107, 1998.
402. Gharakhani, A., and Ghoniem, A.F., "3D Vortex Simulation of Flame in Engines During Compression," ASME Fluids Engineering Summer Meeting, FEDSM-5001, Washington, D.C., June 21-25, 1998.
403. Lakkis, I., and Ghoniem, A.F., "Lagrangian Simulation of Fireplumes," Seventh AIAA/ASME Joint Thermophysics & Heat Transfer Conference, June 14-18, Albuquerque, New Mexico, 1998.
404. Saghbini, J.C., and Ghoniem, A.F., "Simulation of Asymmetric Unsteady Vortex Breakdown," Third International Workshop on Vortex Flows and Related Numerical Methods, Toulouse, France, August 1998.

405. Shankar, S., and Ghoniem, A.F., "A Grid-Free Vortex Method for Axisymmetric Reacting Flows," Third International Workshop on Vortex Flows and Related Numerical Methods, Toulouse, France, August 1998.
406. Gharakhani, A., and Ghoniem, A.F., "3-D Vortex Simulation of Flow in an Opposed-Piston Engine," Third International Workshop on Vortex Flows and Related Numerical Methods, Toulouse, France, August 1998.
407. Lakkis, I. Gritz, L., and Ghoniem, A.F., "Grid Free Simulation of Radiative Transport in Participating Media," Third International Workshop on Vortex Flows and Related Numerical Methods, Toulouse, France, August 1998.
408. Meyer, R., Yilmaz, E., and Heywood, J.B., "Liquid Fuel Flow in the Vicinity of the Intake Valve of a Port-Injected SI Engine," SAE paper 982471, presented at the SAE International Fall Fuels and Lubricants Meeting and Exposition, San Francisco, CA, Oct. 19-22, SAE Trans., Vol. 107, 1998.
409. Shelby, M., Vanderwege, B., and Hochgreb, S., "Early Spray Development in Gasoline Direct-Injected, Spark-Ignition Engines," SAE paper 980160, presented at the SAE International Congress & Exposition, Detroit, MI, Feb. 23-26, 1998.
410. Dawson, Hochgreb, S., "Liquid Fuel Visualization Using Laser-Induced Fluorescence During Cold Start," SAE paper 982466, presented at the SAE International Fall fuels and Lubricants Meeting and Exposition, San Francisco, CA, October 19-22, 1998.
411. Kayes, D., and Hochgreb, S., "Investigation of the Dilution Process for Measurement of Particulate Matter from Spark-Ignition Engines," SAE paper 982601, presented at the SAE International Fall Fuels and Lubricants Meeting and Exposition, San Francisco, CA, Oct. 19-22, SAE Trans., Vol. 107, 1998.
412. Erlandsson, O., Lundholm, G., F., and Johansson, B., and Wong, V.W., "Demonstrating the Performance and Emission Characteristics of a Variable Compression Ratio, Alvar-Cycle Engine," SAE paper 982682, presented at the International Fall Fuels and Lubricants Meeting and Exposition, San Francisco, CA, Oct. 19-22, 1998.
413. Bauer, W.D., Wenisch, J., and Heywood, J.B., "Averaged and Time-Resolved Heat Transfer of Steady and Pulsating Entry Flow in Intake Manifold of a Spark-Ignition Engine," International Journal of Heat and Fluid Flow, vol. 19, pp. 1-9, 1998.
414. Dawson, M.A., and Hochgreb, S., "In-Cylinder Liquid Fuel Visualization During Cold Start," SAE paper 982466, SAE Trans., Vol. 107, 1998.
415. Meyer, R., and Heywood, J.B., "Effect of Engine and Fuel Variables on Liquid Fuel Transport into the Cylinder in Port-Injected SI Engines," SAE paper 1999-01-0563, presented at the 1999 SAE International Congress and Exposition, Detroit, MI, March 1-4, 1999, SAE Trans., Vol. 108, 1999. Published in PT-91, Emission Control and Fuel Economy for Port and Direct Injected SI Engines, June 2005.

416. Meyer, R., and Heywood, J.B., "Evaporation of In-Cylinder Liquid Fuel Droplets in an SI Engine: A Diagnostic-Based Modeling Study," SAE paper 1999-01-0567, presented at the 1999 SAE International Congress and Exposition, Detroit, MI, March 1-4, 1999, SAE Trans., Vol. 108, 1999. Also published in *Combustion in SI Engines*, Number SP-1436, Published March 1, 1999.
417. Tseng, T-C., and Cheng, W.K., "An Adaptive Air/Fuel Ratio Controller for SI Engine Throttle Transients," SAE paper 1999-01-0552, presented at the 1999 SAE International Congress & Exposition, Detroit, MI, March 1-4, 1999, SAE Trans., Vol. 108, 1999.
418. Audette, W.A. III, and Wong, V.W., "A Model for Estimating Oil Vaporization from the Cylinder Liner as a Contributing Mechanism to Engine Oil Consumption," SAE paper 1999-01-1520, presented at the SAE International Spring Fuels and Lubricants Meeting, Dearborn, MI, May 3-6, 1999, SAE Trans., Vol. 108, 1999.
419. Wong, V.W., Casey, S., and Tamai, G., "Lubricant Film Characteristics in the Power Cylinder and Dependence on Location, Oil Properties, and Engine Operating Conditions," Proceedings of the 15th International I.C. Engine Symposium, South Korea, July 13-16, 1999.
420. Shihadeh, A., and Hochgreb, S., "Diesel Engine Combustion of Biomass Pyrolysis Oils," *Energy and Fuels*, 2000, 14, 260-274.
421. Oliveira, I.B., and Hochgreb, S., "Effect of Operating Conditions and Fuel Type on Crevice HC Emissions: Model Results and Comparison with Experiments," SAE paper 1999-01-3578, presented at the SAE Fuels and Lubricants Meeting, Toronto, Oct. 25-29, 1999, SAE Trans., Vol. 108, 1999.
422. Cowart, J., and Cheng, W.K., "Intake Valve Thermal Behavior During Steady-State and Transient Engine Operation," SAE paper no. 1999-01-3643, presented at the SAE Fuels and Lubricants Meeting, Toronto, Oct. 25-29, 1999, SAE Trans., Vol. 108, 1999.
423. Kayes, D., and Hochgreb, S., "Mechanisms of Particulate Matter Formation in Spark-Ignition Engines. 1. Effect of Engine Operating Conditions," presented at the 1999 American Chemical Society, *Environ. Sci. Technol.*, Vol. 33, No. 22, pgs. 3957-3967, 1999.
424. Kayes, D., and Hochgreb, S., "Mechanisms of Particulate Matter Formation in Spark-Ignition Engines. 2. Effect of Fuel, Oil, and Catalyst Parameters," presented at the 1999 American Chemical Society, *Environ. Sci. Technol.*, Vol. 33, pgs. 3968-3977, 1999.
425. Kayes, D., and Hochgreb, S., "Mechanisms of Particulate Matter Formation in Spark-Ignition Engines. 3. Model of PM Formation" presented at the 1999 American Chemical Society, *Environ. Sci. Technol.*, Vol. 33, No. 22, pgs. 3978-3992, 1999.
426. Kayes, D., Liu, H., and Hochgreb, S., "Particulate Matter Emission During Start-Up and Transient Operation of a Spark-Ignition Engine," SAE paper 1999-01-3529, presented at

- the 1999 SAE International Fall Fuels & Lubricants Meeting and Exposition, Toronto, Ontario, Canada, October 25-28, 1999, SAE Trans., Vol. 108, 1999.
427. Hathout, J.P., Fleifil, M., Annaswamy, A.M., and Ghoniem, A.F., "Role of Actuation in Combustion Control," in 1999 IEEE CCA/CACSD, Hawai'i, August 22-27, 1999
 428. Kayes, D., Hochgreb, S., Maricq, M.M., Podsiadlik, D.H., and Chase, R.E., "Particulate Matter Emission During Start-Up and Transient Operation of a Spark-Ignition Engine (2): Effect of Speed, Load, and Real-World Driving Cycles, SAE paper no. 2000-01-1083, 2000.
 429. Fleifil, M., Hathout, J.P., Annaswamy, A.M., and Ghoniem, A.F., "Reduced Order Modeling of Heat Release Dynamics and Active Control of Time-Delay Instability," AIAA-2000-0708, presented at the 38th Aerospace Sciences Meeting Conference & Exhibit, Reno, Nevada, Jan. 10-13, 2000.
 430. Marzouk, Y.M., Najm, H.N., and Ghoneim, A.F., "Flame Embedding Techniques for Turbulent Combustion Simulations at High Damkohler Conditions," AIAA-2000-0866, presented at the 38th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, Jan. 10-13, 2000.
 431. Chon, D.M., and Heywood, J.B., "Performance Scaling of Spark-Ignition Engines: Correlation and Historical Analysis of Production Engine Data," SAE paper no. 2000-01-0565, presented at 2000 SAE World Congress & Exposition, Cobo Center, Detroit, MI, March 6-9, 2000. Also published in Modeling for SI Engines. Published in PT-100, Design of Racing and High Performance Engines, 1998-2003.
 432. VanDerWege, B.A., and Hochgreb, S., "Effects of Fuel Volatility and Operating Conditions on Fuel Sprays in DISI Engines: (1) Imaging Investigation," SAE paper no. 2000-01-0535, presented at the SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.
 433. VanDerWege, B.A., and Hochgreb, S., "Effects of Fuel Volatility and Operating Conditions on Fuel Sprays in DISI Engines: (2) Imaging Investigation," SAE paper no. 2000-01-0536, presented at the SAE 2000 World Congress, Detroit, MI, March 6-9, 2000
 434. Oliveira, I.B., Hochgreb, S., "Detailed Calculation of Heating, Evaporation and Reaction Processes of a Thin Liquid Layer of Hydrocarbon Fuel," SAE paper no. 2000-01-0959, presented at the SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.
 435. Cowart, J.S., and Cheng, W.K., "Throttle Movement Rate Effects on Transient Fuel Compensation in a Port-Fuel-Injected SI Engine," SAE paper 2000-01-1937, presented at the SAE Fuels and Lubricants Meeting, Paris, France, June 19-22, 2000; SAE Trans., Vol. 109; J. of Fuels and Lubricants, paper 2000-01-1937, 2000.
 436. Castaing, B.M., Cowart, J.S., and Cheng, W.K., "Fuel Metering Effects on Hydrocarbon Emissions and Engine Stability During Cranking and Start-Up in a Port Fuel Injected SI Engine," SAE paper 2000-01-2836, presented at the SAE Fuels and Lubricants Meeting,

- Baltimore, MD, October 16-19, 2000, SAE Trans., Vol. 109, J. of Fuels and Lubricants, paper 2000-01-2836, 2000.
437. Audette III, W.A., and Wong, V.W., "Interactions of Oil Vaporization, Film Thickness, and Oil Replenishment Along the Engine Cylinder Liner," ASME Paper 2000-ICE-267, ICE-Vol. 34-1, ASME 2000 Spring Technical Conference, San Antonio, TX, April 9-12, 2000.
 438. Stavinoha, L.L., Alfaro, E.S., Dobbs, H.H., Jr., Villahermosa, L.A., and Heywood, J.B., "Alternative Fuels: Gas to Liquids as Potential 21st Century Truck Fuels," SAE paper no. 2000-01-3422, SAE Trans., Jnl. Of Commercial Vehicles, Vol., presented at Truck and Bus Meeting & Exposition, Portland, Oregon, December 4-6, 2000. Also published in Auto/Oil Quality Improvement Research Program, Vol. Ii, Number SP-1000, Published October 1, 1993.
 439. Weiss, M.A., Heywood, J.B., Drake, E.M., Schafer, A., and AuYeung, F.F., "On the Road in 2020: A Life-Cycle Analysis of New Automobile Technologies," report obtained on the web site address: <http://web.mit.edu/energylab/ww>, MIT Energy Laboratory Report #MIT EL 00-003,. October 2000.
 440. Audette, III, W.A., and Wong, V., "Oil Transport Along the Engine Cylinder Liner – Coupling Vaporization and Film-Thickness Analysis," presented at the 12th International Colloquium Tribology 2000-Plus, Technische Akademie Esslingen, Ostfildern, Germany, January 11-13, 2000, Vol. 1, pp. 357-367, 2000.
 441. Rabute, R., and Tian, T., 2000, "Challenges Involved in Piston Top Ring Designs for Modern SI Engines," ASME Transactions, Journal of Engineering for Gas Turbines and Power, Vol. 123, No. 2, pp. 448-459, April 2001.
 442. Rublewski, M., and J.B. Heywood, "Modeling NO Formation in Spark Ignition Engines with a Layered Adiabatic Core and Combustion Inefficiency Routine," SAE paper 2001-01-1011, SAE Trans., Vol. 110, presented at the SAE 2001 World Congress, Detroit, MI, March 5-8, 2001. Also published in SI Engine Modeling and Simulation, Number SP-1606, Published March 5, 2001.
 443. AuYeung, F., Heywood, J.B., and Schafer, A., "Future Light-Duty Vehicles: Predicting their Fuel Consumption and Carbon-Reduction Potential," SAE paper 2001-01-1081, SAE Trans., Vol. 110, presented at the SAE 2001 World Congress, Detroit, MI, March 5-8, 2001. Also published in Environmental Issues in Vehicle Design and Manufacturing, Number SP-1579, Published March 5, 2001.
 444. Hallgren, B.E., and Heywood, J.B. "Effects of Oxygenated Fuels on DI Diesel Combustion and Emissions," SAE paper 2001-01-0648, presented at the SAE 2001 World Congress, Detroit, MI, March 5-8, 2001. Also published in New Developments in Alternative Fuels for Ci Engines, Number SP-1608, Published March 5, 2001.
 445. Karlsson, R.B., and Heywood, J.B., "Piston Fuel Film Observations in an Optical Access GDI Engine, SAE paper 2001-01-2022, SAE Trans., Vol. 110, presented at the SAE 2001

- International Spring & Fuels & Lubricants Meeting & Exposition, Orlando, FL, May 7-9, 2001. Also published in Experiments in SI Engine Combustion and Performance, Number SP-1629, Published May 7, 2001.
446. Schmidt, D., Wong, V.W., Green, W.H., Weiss, M.A., Heywood, J.B., "Review and Assessment of Fuel Effects and Research Needs in Clean Diesel Technology," ASME Paper ICE-Vol.36-1, Proceedings of ASME-ICED Spring Technical Conference, Philadelphia, PA, April 29- May 2, 2001.
447. Landsberg, G.B., Heywood, J.B., and Cheng, W.K., "Contribution of Liquid Fuel to Hydrocarbon Emissions in Spark Ignition Engines," SAE Paper 2001-01-3587, SAE Trans., Vol. 110, 2001 SAE International Fall Fuels and Lubricants Meeting and Exposition, September 24-27, 2001. Also published in SI and Diesel Engine Performance and Fuel Effects, Number SP-1645, Published September 24, 2001. Also in PT-91, Emission Control and Fuel Economy for Port and Direct Injected SI Engines, June 2005.
448. Ra, Y., and Cheng, W.K., "Laminar Flame Propagation Through a Step-Stratified Charge, 5th International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines (COMODIA), Nagoya, 2001.
449. Froelund, K., Schramm, J., Tian, T., Wong, V.W., and Hochgreb, S., "Analysis of the Piston Ring/Liner Oil Film Development During Warm-Up for an SI Engine," ASME Transactions, Journal of Engineering for Gas Turbines and Power, Vol. 123, No. 1, pp. 109-116, 2001.
450. Yilmaz, E., Thirouard, B., Tian, T. Wong, V.W., Heywood, J.B., and Lee, N., " Analysis of Oil Consumption Behavior During Ramp Transients in a Production Spark Engine," SAE Paper 2001-01-3544, 2001 SAE Trans., Vol. 110, presented at the 2002 SAE Spring Fuels & Lubricants meeting, Reno, Nevada, May 6-9, 2002. Also published in Lubricant Systems, Passenger Car, and Heavy Duty Engine Lubricants, Number SP-1710, Published May 1, 2002.
451. Yilmaz, E., Tian, T, Wong, V.W., and Heywood, J.B., "An Experimental and Theoretical Study of the Contribution of Oil Evaporation to Oil Consumption," SAE paper 2002-01-2684, presented at the SAE International 2002 Powertrain & Fluid Systems Conference & Exhibition, San Diego, CA, October 21-24, 2002. Also published in Lubricant Systems, Passenger Car, and Heavy Duty Engine Lubricants, Number SP-1710, published May 1, 2002.
452. Tian, T., "Dynamic Behaviors of Piston Rings and Their Practical Impact – Part I: Ring Flutter and Ring Collapse and Their Effects on Gas Flow and Oil Transport," Proc. ImechE, Part J: Journal of Engineering Tribology, Vol. 216, pp. 209-227, 2002.
453. Tian, T., "Dynamic Behaviors of Piston Rings and Their Practical Impact – Part II: Oil Transport, Friction, and Wear of Ring/Liner Interface and the Effects of Piston and Ring Dynamics," Proc. ImechE, Part J: Journal of Engineering Tribology, Vol. 216, pp. 229-247, 2002.

454. Klein, D., and Cheng, W.K., "Spark-Ignition Engine Hydrocarbon Emissions Behaviors in Stopping and Restarting," SAE Paper 2002-01-2804, Powertrain & Fluid Systems Conference & Exhibition, San Diego, CA, October, 2002.
455. Santoso, H., and Cheng, W.K., "Mixture Preparation and Hydrocarbon Emissions Behaviors in the First cycle of SI Engine Cranking," SAE Transactions, 111, Journal of Fuels and Lubricants, SAE Paper 2002-01-2805, 2002.
456. Sandoval, D., and Heywood, J.B., "An Improved Friction Model for Spark-Ignition Engines," SAE paper no. 2003-01-0725, SAE 2003 World Congress, Detroit, MI, March 3-6, 2003; also in Transactions, Vol. 112, Journal of Engines, 2003. Also published in Modeling of SI Engines, Number SP-1745, Published March 3, 2003.
457. Tully E.J., and Heywood, J.B., "Lean-Burn Characteristics of a Gasoline Engine Enriched with Hydrogen from a Plasmatron Fuel Reformer," SAE paper no. 2003-01-0630, World Congress, Detroit, MI, March 3-6, 2003; also in Transactions, Vol. 112, Journal of Engines, 2003. Also published in SI Combustion, Number SP-1743, Published March 3, 2003.
458. Tanaka, S., Ayala, F., Keck, J.C., and Heywood, J.B., "Two-Stage Ignition in HCCI Combustion and HCCI Control by Fuels and Additives," Combustion & Flame, 132, pp. 219-239, 2003.
459. Tanaka, S., Ayala, F., and Keck, J.C., "A Reduced Chemical Kinetic Model for HCCI Combustion of Primary Reference Fuels in a Rapid Compression Machine," Combustion and Flame, Vol. 133, pp. 467-481, 2003.
460. Zhang, Y., and Cheng, W.K., "Fuel Sulfur and Aging Effects on the Oxygen Storage Capacity in Three-Way Catalytic Converters," SAE Paper 2003-01-1874, presented at the SAE Fuels & Lubricants Spring Meeting, Yokohama, Japan, May 20, 2003.
461. Hallgren, B.E., and Heywood, J.B., "Effects of Substantial Spark Retard on SI Engine Combustion and Hydrocarbon Emissions," SAE paper no. 2003-01-3237, 2003 Powertrain & Fluid Systems Conference, October 29, 2003; also in Transactions, Vol. 112, Journal of Fuels and Lubricants, 2003.
462. Liu, L., Tian, T., and Rebutte, R., "Development and Application of Analytical Tools for Piston Ring Design," SAE paper 2003-01-3112, 2003 Powertrain & Fluid Systems Conference, Pittsburg, PA, October 27-30, 2003.
463. Thirouard, B., Tian, T., "Oil Transport in the Piston Ring Pack (Part I): Identification and Characterization of Main Oil Transport Routes and Mechanisms," SAE paper 2003-01-0345, SAE/JSAE 2003 Spring Fuels and Lubricants Meeting, Yokohama, Japan, May 19-22, 2003.

464. Thirouard, B., Tian, T., "Oil Transport in the Piston Ring Pack (Part II): Zone Analysis and Macro Oil Transport Model," SAE Paper 2003-01-0346, SAE/JSAE 2003 Spring Fuels and Lubricants Meeting, Yokohama, Japan, May 19-22, 2003.
465. Kitsopanidis, I., and Cheng, W.K., "Auto-Ignition Study of Fuel-Rich N-Butane/Air Mixture Using a Rapid Compression Machine," Session Paper No. 03F-31, Western States Section/Combustion Institute 2003 Fall Meeting, U. of CA, Los Angeles, October 20 & 21, 2003.
466. Shudo, T., Cheng, W.K., Kuninaga, T., and Hasegawa, T., "Reduction of Cooling Loss in Hydrogen Combustion by Direct Injection Stratified Charge", SAE paper 2003-01-3094, SAE Transactions, Vol. 111, Journal of Fuels and Lubricants, SAE Fuels & Lubricants Spring Meeting, Yokohama, Japan, May 20, 2003.
467. Topinka, J.A., Gerty, M., Heywood, J.B., and Keck, J.C., "Knock Behavior of a Lean-Burn, H₂ and CO Enhanced, SI Gasoline Engine Concept," SAE paper 2004-01-0975, SAE Transactions, Vol. 113, Journal of Engines, SAE 2004 World Congress & Exhibition, Detroit, MI, March 1-5, 2004.
468. Heywood, J.B., Weiss, M.A., Schafer, A., Bassene, S.A., and Natarajan, V.K., "The Performance of Future ICE and Fuel Cell Powered Vehicles and Their Potential Fleet Impact," SAE paper 2004-01-1011, SAE 2004 World Congress & Exhibition, Detroit, MI, March 1-5, 2004. Also published in PT-96, Fuel Cell Technology for Vehicles, 2002-2004.
469. Lang, K., Cheng, W.K., Borland, M., Thomas, C., Zhao, F., "Effect of Intake Cam Phasing on First Cycle Fuel Delivery and HC Emissions in an SI Engine," SAE paper 2004-01-1852, Toulouse, France, 2004; also in SAE Transactions, Vol. 112, Journal of Fuels and Lubricants, 2004.
470. Smedley, G., Tian, T., and Wong, V.W., "Piston Ring Design for Friction Reduction in an Advanced Natural Gas Power Generation Engine," Paper No. 263, Proceedings of the Twenty-Fourth CIMAC World Congress on Combustion Engine Technology (Conseil International des Machines a Combustion), Kyoto, Japan, June 7-11, 2004.
471. Smedley, G., Mansouri, S.H., Tian, T., and Wong, V.W., "Friction Reduction Via Piston Ring Design for an Advanced Natural-Gas Reciprocating Engine," ASME Paper ICEF2004-879, Proceedings of ASME-ICED Fall Technical Conference, Long Beach, CA, October 24-27, 2004.
472. Lopez, O., Tian, T., and Wong, V.W., "Experimental Study of Lube Oil Characteristics in the PCV System and Effects on Engine Oil Consumption," ASME Paper ICEF2004-928, Proceedings of ASME-ICED Fall Technical Conference, Long Beach, CA, October 24-27, 2004.
473. Jocsak, J., Wong, V.W., and Tian, T., "The Effects of Cylinder Liner Finish on Piston Ring-Pack Friction," ASME Paper ICEF2004-952, Proceedings of ASME-ICED Fall Technical Conference, Long Beach, CA, October 24-27, 2004.

474. Liu, L., and Tian, T., "A Three Dimensional Model for Piston Ring-Pack Dynamics and Blow-By Gas Flow," ASME Paper ICEF2004-968, Proceedings of ASME-ICED Fall Technical Conference, Long Beach, CA, October 24-27, 2004.
475. Yilmaz, E., Tian, T., Wong, V., and Heywood, J.B., "The Contribution of Different Oil Consumption Sources to Total Oil Consumption in a Spark Ignition Engine," SAE Paper 2004-01-2909, Proceedings of SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa Florida, October 25-28, 2004. Also published in Oils, Rheology, Tribology, and Driveline Fluids; Number SP-1894; published October 25, 2004.
476. Mansouri, S.H., and V.W. Wong, "Effects of Piston Design Parameters on Piston Secondary Motion and Skirt-Liner Friction," SAE Paper 2004-01-2911, SAE Transactions, Vol. 113, Journal of Engines, Proceedings of SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa Florida, October 25-28, 2004. Also published in Proc. IMechE, Part J: Journal of Engineering Tribology, Vol. 219, pp. 435-449, 2005.
477. Cho, Y., and Tian, T., "Modeling Engine Oil Vaporization and Transport of the Oil Vapor in the Piston Ring Pack of Internal Combustion Engines," SAE Paper 2004-01-2912, Proceedings of SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa Florida, October 25-28, 2004.
478. Manz, D.L., Cowart, J.S., and Cheng, W.K., "High Speed Video Observation of Engine Oil Aeration," SAE Paper 2004-01-2913, Proceedings of SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa Florida, October 25-28, 2004.
479. Jocsak, J., Wong, V.W., Tomanik, E., and Tian, T., "The Characterization and Simulation of Cylinder Liner Surface Finishes," ASME Paper ICES2005-1080, Proceedings of ASME-ICED Spring Technical Conference, Chicago, IL, April 5-7, 2005.
480. Xiong, D., Tian, T., and Wong, V.W., "Transient Heat Transfer of Piston/Rings/Liner System in Diesel Engines," ASME Paper ICES2005-1107, Proceedings of ASME-ICED Spring Technical Conference, Chicago, IL, April 5-7, 2005.
481. Jocsak, J, Tomanik, E, Wong, V., Tian, T. "The Characterization And Simulation Of Cylinder Liner Surface Finishes" ASME Paper ICES-2005-1080, Proceedings of ASME-ICED 2005 Spring Technical Conference, Chicago April 5-7, 2005.
482. Ivanic, Z., Ayala, F., Goldwitz, J., and Heywood, J.B., "Effects of Hydrogen Enhancement on Efficiency and NO_x Emissions of Lean and EGR-Diluted Mixtures in a SI Engine," SAE Paper 2005-01-0253, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005. Also published in SI, Number SP-1972; published April 11, 2005.
483. Goldwitz, J.A., and Heywood, J.B., "Combustion Optimization in a Hydrogen-Enhanced Lean-Burn SI Engine," SAE Paper 2005-01-0251, SAE Transactions, Vol. 114, Journal of Engines, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.

Also published in SI Combustion and Direct Injection SI Engine Technology, Number SP-1972, published April 11, 2005.

484. Santoso, H.G., Matthews, J., and Cheng, W.K., "Managing SI/HCCI Dual-Mode Engine Operation," SAE Paper 2005-01-0162, SAE Transactions, Vol. 114, Journal of Engines, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
485. Matthews, J., Santoso, H.G., and Cheng, W.K., "Load Control for an HCCI Engine," SAE Paper 2005-01-0150, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
486. Liu, L., and Tian, T., "Modeling Piston Ring-Pack Lubrication with Consideration of Ring Structure Response," SAE Paper 2005-01-1641, SAE Transactions, Vol. 114, Journal of Engines, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
487. Liu, L., and Tian, T., "Implementation and Improvements of a Flow Continuity Algorithm in Modeling Ring/Liner Lubrication," SAE Paper 2005-01-1642, SAE Transactions, Vol 114, Journal of Engines, presented at the 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
488. Santoso, H., Matthews, J., and Cheng, W.K., "Characteristics of HCCI Engine Operating in the Negative-Valve-Overlap Mode," SAE Paper 2005-01-2133, presented at the SAE Fuels and Lubricants Meeting, Rio de Janeiro, Brazil, May 11-13, 2005.
489. Costanzo, V.S., and Heywood, J.B., "Mixture Preparation Mechanisms in a Port Fuel Injected Engine," SAE paper 2005-01-2080, presented at the SAE Fuels and Lubricants Meeting, Rio de Janeiro, Brazil, May 11-13, 2005.
490. Wong, V.W., "Effects of Lubricant Wetting Boundary Conditions on Engine Piston and Ring-Pack Friction", presented at 60th STLE Annual Meeting and Exhibition, Las Vegas, NV, May 15-19, 2005.
491. Sappok, A., Llaniguez, J., Acar, J., and Wong, V., "Emissions and In-Cylinder Combustion Characteristics of Fischer-Tropsch and Conventional Diesel Fuels in a Modern CI Engine," ASME Paper ICEF2005-1326, Proceedings of ASME ICED Fall Technical Conference, Ottawa, Canada, September 11-14, 2005.
492. Jocsak, J., Li, Y., Tian, T., and Wong, V., "Analyzing the Effects of Three-Dimensional Cylinder Liner Surface Texture on Ring-Pack Performance with a Focus on Honing Groove Cross-Hatch Angle," ASME Paper ICEF2005-1333, Proceedings of ASME Internal Combustion Engine Division Fall Technical Conference, Ottawa Canada, Sept. 11-14, 2005.
493. Moughon, L., and Wong, V., "Effects of Lubricant and Piston Design on Reciprocating Engine Friction," ASME Paper ICEF2005-1343, Proceedings of ASME Internal Combustion Engine Division Fall Technical Conference, Ottawa Canada, Sept. 11-14, 2005.

494. Liu, L., Tian, T., Yilmaz, E., 2005, "Modeling Oil Evaporation from the Engine Cylinder Liner With Consideration of the Transport of Oil Species along the Liner," WTC 2005-63984, Proceedings of WTC2005, World Tribology Congress III, September 12-16, 2005, Washington, D.C., USA.
495. Rocafort, L., Andreae, M., Green, W.H., Cheng, W.K., and Cowart, J.S., "A Modeling Investigation into the Optimal Intake and Exhaust Valve Event Duration and Timing for a Homogeneous Charge Compression Ignition Engine," SAE paper 2005-01-3746, Proceedings of the Powertrain & Fluid Systems Conference & Exhibition, San Antonio, TX, October, 2005.
496. Przesmitzki, S., Vokac, A., and Tian, T., "An Experimental Study of Oil Transport between the Piston Ring Pack and Cylinder Liner, " SAE Paper 2005-01-3823, Proceedings of the Powertrain & Fluid Systems Conference & Exhibition, San Antonio, TX, October 24-27, 2005.
497. Gerty, M.D., and Heywood, J.B., "An Investigation of Gasoline Engine Knock Limited Performance and the Effects of Hydrogen Enhancement," SAE paper 2006-01-0228, presented at the SAE 2006 World Congress, Detroit, MI, April 3-6, 2006. Also published in SI Combustion and Direct Injection SI Engine Technology, Number SP-2016, published April 3, 2006.
498. Ayala, F.A., Gerty, M.D., and Heywood, J. B., "Effects of Combustion Phasing, Relative Air-Fuel Ratio, Compression Ratio, and Load on SI Engine Efficiency," SAE paper 2006-01-0229, Transactions, V. 115, Journal of Engines, Section 3, presented at the SAE 2006 World Congress, Detroit, MI, April 3-6, 2006.
499. Ivanic, Z., and Heywood, J.B., "Predicting the Behavior of a Hydrogen-Enhanced Lean-Burn SI Engine Concept," SAE paper 2006-01-1106, presented at the SAE 2006 World Congress, Detroit, MI, April 3-6, 2006.
500. Jocsak, J., Li, Y., Tian, T., and Wong, V., "Modeling and Optimizing Honing Texture for Reduced Friction in Internal Combustion Engines, SAE paper 2006-01-0647, Transactions, V. 115, Fuels & Lubricants, SAE World Congress & Exhibition, Detroit, MI, April 3-6, 2006.
501. Quillen, K., Stanglmaier, R. H., Moughon, L., Takata, R., Wong, V., Reinbold, E., and Donohue, R. "Friction Reduction by Piston Ring Pack Modifications of a Lean-Burn 4-Stroke Natural Gas Engine: Experimental Results," ASME paper ICES2006-1327, Proceedings of ASME ICED Spring Technical Conference, Aachen, Germany, May 8-10, 2006.
502. Sappok, A.G., and Wong, V.W., "Comparative Particulate Trap Performance using Fischer-Tropsch and Conventional Diesel Fuels in a Modern CI Engine," ASME paper ICES2006-1345, Proceedings of ASME ICED Spring Technical Conference, Aachen, Germany, May 8-10, 2006.

503. Saad, P., Kamo, L., Mekari, M., Bryzik, W., Wong, V., Nicolas, D., Mnatsakanov, R., "Modeling and Measurement of Tribological Parameters between Piston Rings-liner in Turbocharged Diesel Engine," Paper# IJTC2006-12308, STLE/ASME International Joint Tribology Conference, San Antonio, TX, October 23-25, 2006.
504. Thomas, B.C. , Wong, V. W., "Framework for Lubricant Chemistry Sensitive Wear Modeling," Paper# IJTC2006-12365, STLE/ASME International Joint Tribology Conference, San Antonio, TX, October 23-25, 2006.
505. Manz, D., and W.K. Cheng, "On-line Measurements of Engine Oil Aeration by X-Ray Absorption," ASME paper ICES2006-1356, Proceedings of ASME ICED Spring Technical Conference, Aachen, Germany, May 8-10, 2006; The ASME J. of Gas Turbines and Power, 129, No. 1, p. 287-293, 2007.
506. Schafer, A., Heywood, J.B., and Weiss, M.A., "Future Fuel Cell and Internal Combustion Engine Automobile Technologies: A 25-Year Life Cycle and Fleet Impact Assessment," Elsevier, Energy, pp. 1728-1751, 31, 2006.
507. Heywood, J.B., "Fueling Our Transportation Future," Scientific American, Vol. 295, No. 3, September 2006.
508. Kitsopanidis, I., and Cheng, W.K., "Soot Formation Study in a Rapid Compression Machine," Transactions of the ASME, J. of Gas Turbines and Power, 128, No. 4, p. 942-949, 2006.
509. Lang, K., and Cheng, W.K., "Effects of Fuel Injection Strategy on HC Emissions in a Port-Fuel-Injection Engine During Fast Idle," SAE Paper 2006-01-3400, SAE Transactions, 114, Journal of Fuels and Lubricants, 2006.
510. Takata, R., Li, Y., Wong, V.W., "Effect of Liner Surface Texturing on Ring/Liner Friction in Large-Bore IC Engines, Paper ICEF2006-1525, Proceedings of ICEF06 ASME Internal Combustion Engine Division 2006 Fall Technical Conference, Sacramento, California, November 5-8, 2006.
511. Takata, R., and Wong, V.W., "Effect of Lubricant Viscosity on Ring/Liner Friction in Advanced Reciprocating Engine Systems, Paper ICEF2006-1526, Proceedings of ICEF06 ASME Internal Combustion Engine Division 2006 Fall Technical Conference, Sacramento, CA, November 5-8, 2006.
512. Bandivadekar, A., and Heywood, J.B., "Coordinated Policy Measures for Reducing the Fuel Consumption of the U.S. Light-Duty Vehicle Fleet," in Sperling, D., and Cannon, J. (Editors), Driving Climate Change: Cutting Carbon from Transportation, Elsevier Academic Press, pp. 41-72, September, 2006.
513. Lee, D., and Heywood, J.B., "Effects of Charge Motion Control During Cold Start of SI Engines," SAE paper 2006-01-3399, presented at the SAE Powertrain & Fluid Systems Conference & Exhibition, Toronto, Canada, Oct. 16-19, 2006.

514. Wong, V., Watson, S., Huang, W. "Correlations Among Ash-Related Oil Species in the Power Cylinder, Crankcase and the Exhaust Stream of a Heavy-Duty Diesel Engine," presented at the ASTM Symposium on Automotive Lubricant Testing and Additive Development, Lake Buena Vista, FL, December 3-5, 2006.
515. Mittal, V., Revier, B.M., and Heywood, J.B., "Phenomena that Determine Knock Onset in Spark-Ignition Engines," SAE paper 2007-01-0007, SAE Fuels and Lubricants Meeting, Cape Town, S. Africa, January 23-25, 2007; SAE Trans., Vol. 116-3, SAE 2007 Jrl. of Engines, March, 2007.
516. Lang, K., and Cheng, W.K., "A Novel Strategy for Fast Catalyst Light-Off Without the Use of An Air Pump," SAE Paper 2007-01-0044, Transactions V. 116, Journal of Fuels & Lubricants, SAE Fuels and Lubricants Meeting, Cape Town, S. Africa, January 23-25, 2007.
517. Quillen, K., Wong, V.W., Stanglmaier, R.H., Reinbold, E., Donahue, R., Tellier, K., and Carey, V., "Friction Reduction Due to Lubrication Oil Changes in a Lean-Burn 4-Stroke Natural Gas Engine: Experimental Results," ASME Paper JRCICE2007-40128, Proceedings of JRCICE2007:Joint Rail Conference & Internal Combustion Engine Division 12th Technical Conference, Pueblo, CO, March 13-14, 2007.
518. Thomas, B.C. and Wong, V.W., "Engine Wear Modeling with Sensitivity to Lubricant Chemistry: A Theoretical Framework", SAE Paper 2007-01-1566, presented at the 2007 SAE Annual Congress and Exposition, Detroit, MI, April 16-19, 2007.
519. Saad, P., Kamo, L., Mekari, M., Bryzik, W., Wong, V., Dmitrichenko, N., Mnatsakanov, R., "Modeling and Measurement of Tribological Parameters between Piston Rings & Liner in Turbocharged Diesel Engine," SAE Paper 2007-01-1440, SAE World Congress, Detroit, MI, April 16-19, 2007.
520. Kasseris, E.P., and Heywood, J., "Comparative Analysis of Automotive Powertrain Choices for the Next 25 Years," SAE paper 2007-01-1605, Trans., Vol. 116-7, Journal of Materials & Manufacturing, Vol.116-5, SAE World Congress, Detroit, MI, April 16-19, 2007; SAE, March, 2008.
521. Sappok, A., and Wong, V., "Detailed Chemical and Physical Characterization of Ash Species in Diesel Exhaust Entering Aftertreatment Systems," SAE Paper 2007-01-0318, SAE World Congress, Detroit, MI, April 16-19, 2007.
522. Andreae, M., Cheng, W.K., Kenney, T., & Yang, J., "Effect of Air Temperature and Humidity on Gasoline HCCI Operating in the Negative-Valve-Overlap Mode," SAE Paper 2007-01-0221, SAE Congress, Detroit, April, 2007.
523. Przesmitzki, S., Tian T., "Oil Transport Inside the Power Cylinder System During Transient Load Changes," SAE 2007-01-1054, SAE International Congress and Exposition, Detroit, MI, April, 2007.

524. Wong, V.W., Thomas, B., Watson, S., "Macroscopic Oil-Transport Considerations in Modeling Local Surface Phenomena in Reciprocating Engines," presented at the 62nd STLE Annual Meeting and Exhibition, Philadelphia, PA, May 6-10, 2007.
525. Lee, P., Priest, M., Wong, V.W., "An Holistic Approach to Flow Rates and Residence Times in the Automotive Piston Ring Pack," presented at the 62nd STLE Annual Meeting and Exhibition, Philadelphia, PA, May 6-10, 2007.
526. Watson, S., Wong, V. W., "Relationship Between the Composition of Ring-Pack and Crankcase Oil Samples Extracted from an Operating Heavy-Duty Diesel Engine," presented at the 62nd STLE Annual Meeting and Exhibition, Philadelphia, PA, May 6-10, 2007.
527. Thomas, B., Wong, V.W., "Lubricant Chemistry Sensitive Wear Modeling with Engine Applications," presented at the 62nd STLE Annual Meeting and Exhibition, Philadelphia, PA, May 6-10, 2007.
528. Sappok, A., Wong, V., Choi, Y., Pope, M., and Singh, N, "Comparative Diesel Particulate Trap Performance Assessment: Impact of Catalyst Loading and Feed Gas Characteristics in a Modern CI Engine," CIMAC Paper #222, CIMAC Congress 2007, May 21-24, 2007, Vienna, Austria.
529. Hong, J., Li, Y., Wang, J., Tian, T., Hart, D., "Scoring Failures of Flexible Metal to Metal Face Seals: Modeling & Validation, " Presented in Society of Tribologists and Lubrication Engineers Spring meeting, Philadelphia, PA, May 2007.
530. Hong, J., Li, Y., Wang, J., Tian, T., Hart, D., "Scoring Failures of Flexible Metal to Metal Face Seals: Failure Tests & Analysis, " Presented in Society of Tribologists and Lubrication Engineers Spring meeting, Philadelphia, PA, May 2007.
531. Wong, V.W., Thomas, B.C, and Watson, S.A.G., "Bridging Macroscopic Lubricant Transport and Surface Tribochemical Investigations in Reciprocating Engines," Proc. IMechE, Part J: J. Engineering Tribology, 2007, 221(J3), 183-193.
532. Andrae, M., Cheng, W.K., Kenney, T., & Yang, J., "On HCCI Engine Knock," SAE Paper 2007-01-1858, SAE/JSAE Joint Powertrain and Fluid Systems Meeting, Kyoto, Japan, June, 2007.
533. Angelos, J.P., Andrae, M.M., Green, W.H., Cheng, W.K., Kenney, T., & Xu, Y., "Effects of Variations in Market Gasoline Properties on HCCI Load Limits," SAE Paper 2007-01-1859, SAE/JSAE Joint Powertrain and Fluid Systems Meeting, Kyoto, Japan, June, 2007.
534. Bodek, K., & Wong, V., "The Effects of Sulfated Ash, Phosphorus and Sulfur on Diesel Aftertreatment Systems—A Review," SAE/Japan Society of Automotive Engineers Conference, JSAE Paper 20077200 and SAE Paper 2007-01-1922, Kyoto, Japan, July 23-26, 2007.

535. Watson, S.A., Huang, W., Wong, V.W., "Correlations Among Ash-Related Oil Species in the Power Cylinder, Crankcase and the Exhaust Stream of a Heavy-Duty Diesel Engine," JSAE Paper 20077204 and SAE Paper 2007-01-1965, SAE/Japan Society of Automotive Engineers Conference, Kyoto, Japan, July 23-26, 2007.
536. Ayala, F.A., and Heywood, J.B., "Lean SI Engines: The Role of Combustion Variability in Defining Lean Limits," ICE2007 – 8th International Conference on Engines for Automobile, SAE Paper 2007-24-0030, SAE Naples Section/SAE International, Capri, Naples, Italy, September 16-20, 2007.
537. Scaringe, R.J., & Cheng, W.K., "Influence of Intake Port Charge-Motion-Control-Valve on Mixture Preparation in a Port-Fuel-Injection Engine," SAE Paper 2007-01-4013, SAE Fuels and Lubricants Meeting, Chicago, IL, October 29-31, 2007.
538. Baran, B., & Cheng, W.K., "Assessing the Windage Tray Blockage Effect on Aeration in the Oil Sump," SAE Paper 2007-01-4109, SAE Fuels and Lubricants Meeting, Chicago, IL, October 29-31, 2007.
539. Kromer, M.A., and Heywood, J.B., "A Comparative Assessment of Electric Propulsion Systems in the 2030 U.S. Light-Duty Vehicle Fleet," SAE Paper 2008-01-0459, Int. Journal of Engines 1(1): 372-391, SAE World Congress, Tory, MI, April 14-17, 2008.
540. Sappok, A., and Wong, V.W., "Impact of Biodiesel on Ash Emissions and Lubricant Properties Affecting Fuel Economy and Engine Wear: Comparison with Conventional Diesel Fuel," SAE Paper 2008-01-1395, SAE World Congress, Tory, MI, April 14-17, 2008, presented at the SAE Int. J. Fuels Lubr. 1(1): 731-747, April, 2009.
541. Przesmitzki, S., and Tian, T., "An Experimental Study of the Time Scales and Controlling Factors Affecting Drastic Blow-by Increases during Transient Load Changes in SI Engines", SAE Paper 2008-01-0794, SAE World Congress, Tory, MI, April 14-17, 2008.
542. Thomas, B.C., Wong, V.W., "Engine-Component Wear Modeling with Consideration of Growth and Removal of Surface Films: Computational Framework and Preliminary Results", ICES2008, Proceedings of the ASME Internal Combustion Engine Division 2008 Spring Technical Conference, Chicago, Illinois, April 27-30, 2008.
543. Ogura, T., Angelos, J.P., Green, W.H., Cheng, W.K., Kenney, T.E., Xu, Yi, "Primary Reference Fuel Behavior in a HCCI Engine near the Low-Load Limit," SAE Transactions, 116, Journal of Fuels and Lubricants, Paper 2008-01-1667, 2008. Also published in SAE Int. J. Fuels Lubr. 1(1):1098-1109, April 2009.
544. Angelos, J., Puignou, M., Andreae, M., Cheng, W., Green, W. Singer, M., "Detailed Chemical Kinetic Simulations of Homogeneous Charge Compression Ignition Engine Transients," Int. J. of Engine Research, Vol. 9, No.2, pp. 149 – 164, April, 2008.
545. Sappok, A., Beauboeuf, D, Wong, V., "A Novel Accelerated Aging System to Study Lubricant Additive Effects on Diesel Aftertreatment System Degradation", SAE 2008-

- 01-1549, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008, SAE Int. J. Fuels Lubr., Vol. 1, No. 1, p. 813-827, April, 2009.
532. Cheah, L., Bandivadekar, A., Bodek, K., Kasseris, E. and Heywood, J., "The Trade-off between Automobile Acceleration Performance, Weight, and Fuel Consumption", SAE, 2008-01-1524, SAE Int., J. Fuels Lubr. 1(1): 771-777, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008.
533. McClure, F., Tian, T., "A Simplified Piston Secondary Motion Model Considering the Dynamic and Static Deformation of Piston Skirt and Cylinder Bore in Internal Combustion Engines", SAE 2008-01-1612, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008.
534. Chen, H., Li, Y., Tian, T., "A Novel Approach to Model the Lubrication and Friction Between the Twin-Land Oil Control Ring and Liner with Consideration of Micro Structure of the Liner Surface Finish in Internal Combustion Engines", SAE 2008-01-1613, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008.
535. Chen, H., Tian, T., "The Influences of Cylinder Liner Honing Patterns and Oil Control Ring Design Parameters on the Interaction Between the Twinland Oil Control Ring and the Cylinder Liner in Internal Combustion Engines," SAE 2008-01-1614, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008.
536. Li, Y., Chen, H., and Tian T., "A Deterministic Model for Lubricant Transport within Complex Geometry under Sliding Contact and its Application in the Interaction between the Oil Control Ring and Rough Liner in Internal Combustion Engines", SAE 2008-01-1615, 2008 SAE International Powertrains, Fuels and Lubricants Congress, Shanghai, China, June 23-25, 2008.
537. Bandivadekar, A., Bodek, K., Cheah, L., Evans, C., Groode, T., Heywood, J., Kassereis, E., Kromer, M., Weiss, M., "On the Road in 2035: Reducing Transportation's Petroleum Consumption and GHG Emissions," MIT Laboratory for Energy and the Environment, Report No. LFEE 2008-05 RP, July 2008.
538. Cheah, L., Heywood, J., and Kirchain, R., "Aluminum Stock and Flows in the U.S. Light-Duty Vehicle Fleet and Implications on the Material Cycle Energy Use," Journal of Industrial Ecology, August, 2008.
539. Mittal, V., Heywood, J.B., "The Relevance of Fuel RON and MON to Knock Onset in Modern SI Engines," SAE 2008-01-2414, SAE Powertrains, Fuels & Lubricants Meeting, Rosemont, IL, October 7-9, 2008.
540. Hardy, A.J.J., Heywood, J.B., and Kenney, T.E., "Fuel Economy Benefits and Aftertreatment Requirements of a Naturally Aspirated HCCI-SI Engine System, SAE

- 2008-01-2512, SAE Int. J. Engines 1(1): 1263-1277, SAE Powertrains, Fuels & Lubricants Meeting, Rosemont, IL, October 7-9, 2008.
541. Hoffmann, W., Wong, V., Cheng, W.K., Morgenstern, D. A., "A New Approach to Ethanol Utilization: High Efficiency and Low NO_x in an Engine Operating on Simulated Reformed Ethanol," SAE 2008-01-2415, SAE Powertrains, Fuels & Lubricants Meeting, Rosemont, IL, October 7-9, 2008.
542. Watson, S.A.G., Wong, V.W., "The Effects of Fuel Dilution with Biodiesel and Low Sulfur Diesel on Lubricant Acidity, Oxidation and Corrosion – A Bench Scale Study with CJ-4 and CI-4+ Lubricants," Paper IJTC2008, Proceedings of the STLE/ASME International Joint Tribology Conference, Miami, FL, October 20-22, 2008.
543. Wong, V.W. and Liao, K., "Sensitivity of Engine-Component Wear to Lubricant-Additive and Contact Conditions Using an Antiwear Film Formation Model," Paper #IJTC2008-71219, presented at the STLE/ASME International Joint Tribology Conference, Miami, FL, October 20-22, 2008.
544. Bandivadekar, A., Cheah, L., Evans, C., Groode, T., Heywood, J.B., Kasseris, E., Kromer, M., and Weiss, M., "Reducing the Fuel Use and Greenhouse Gas Emissions of the US Vehicle Fleet," Energy Policy, Vol. 36, Issue 7, July 2008, pgs. 2754-2760.
545. Evans, C., Cheah, L., Bandivadekar, A., and Heywood, J.B., "Getting More Miles per Gallon," Issues in Science and Technology, Volume XXV, Number 2, 2009.
546. Schafer, A., Heywood, J.B., Jacoby, H.D., and Waitz, I.A., *Transportation in a Climate-Constrained World*, The MIT Press, Cambridge, Massachusetts, London, England, April, 2009.
547. Kar, K., Cheng, W., "Speciated Engine-Out Organic Gas Emissions from a PFI-SI Engine Operating on Ethanol/Gasoline Mixtures," SAE paper 2009-01-2673, presented at SAE 2010 World Congress & Exhibition, April 13-15, 2010, Detroit, MI.
548. Sappok, A., and Wong, V.W., "Ash Effects on Diesel Particulate Filter Pressure Drop Sensitivity to Soot and Implications for Regeneration Frequency and DPF Control, SAE paper 2010-01-0811, presented at SAE 2010 World Congress & Exhibition, April 13-15, 2010, Detroit, MI, SAE Int. J. Fuels Lubr. 3(1): 380-396, August, 2010.
549. Sappok, A., Rodriguez, R., and Wong, V.W., "Characteristics and Effects of Lubricant Additive Chemistry on Ash Properties Impacting Diesel Particulate Filter Service Life," SAE paper 2010-01-1213, presented at SAE 2010 World Congress & Exhibition, April 13-15, 2010, Detroit, MI.
550. Sappok, A., Santiago, M., Vianna, T., and Wong, V.W., "Characteristics and Effects of Ash Accumulation on Diesel Particulate Filter Performance: Rapidly Aged and Field Aged Results" SAE Paper 2009-01-1086, SAE World Congress, Detroit, MI, April 20-23, 2009.

551. Watson, S.A.G, Wong, V., Brownawell, D., Lockledge, S., “Controlling Lubricant Acidity with an Oil Conditioning Filter” Paper ICES2009-76100, Proceedings of the ICES2009 ASME Internal Combustion Engine Division 2009 Spring Technical Conference, Milwaukee, WI, May 3-6, 2009.
552. Watson, S., Wong, V.W., “Advanced Diagnostics for In-Situ Measurements of Lubricant Composition at the Piston and Liner Interface,” presented at the 64th STLE Annual Meeting and Exhibition, May 17-21, 2009, Lake Buena Vista, FL.
553. Watson, S., Wong, V.W., “Using a Chemistry-Sensitive Oil Filter to Control Lubricant Acidity,” presented at the 64th STLE Annual Meeting and Exhibition, May 17-21, 2009, Lake Buena Vista, FL.
554. Seyed-Reihani, S., Green, W., and Wong, V.W., “Detailed Surface Reaction Mechanism for Platinum Diesel Oxidation Catalysts,” Paper 31B1, presented at the Sixth U.S. National Combustion Meeting, The Combustion Institute, Ann Arbor, MI, May 17-20, 2009.
555. Watson, S.A.G., Wong, V.W., Brownawell, D., Lockledge, S.P. and Harold, S., "Oil Conditioning as a Means to Minimize Lubricant Ash Requirements and Extend Oil Drain Interval," SAE Paper No. 2009-01-1782, SAE International Powertrains, Fuels and Lubricants Conference, Florence, Italy, June 14-17, 2009.
556. Heywood, J.B., and Welling, O.Z., “Trends in Performance Characteristics of Modern Automobile SI and Diesel Engines,” SAE 2009-01-1892, SAE International Powertrains, Fuels & Lubricants Meeting, Florence, Italy, June 15-17, 2009, SAE Int. J. Engines 2(1): 1650-1662, 2009. Also published in *Advanced in Alternative Energy and Fuels for the Transportation Sector*, 2010, Number SP-2292, SAE Int. J. Engines, Vol. 2, No. 1, pp. 1650-1662, 2009.
557. Kar, K., Cheng, W.K, Ishii, K., “Effects of Ethanol Content on Gasohol PFI Engine Wide-Open-Throttle Operation,” SAE Paper 2009-01-1907, SAE International Powertrains, Fuels & Lubricants Meeting, Florence, Italy, June 15-17, 2009. Also published in SAE Int. J. Fuels Lubr. 2(1):895-901, October 2009.
558. Cheah, L., Evans, C., Bandivadekar, A., and Heywood, J., “Factor of Two: Halving the Fuel Consumption of New U.S. Automobiles by 2035,” LFEE Report, 2007-04 WP, 2007, also Chapter 4 in *Reducing Climate Impacts in the Transportation Sector*, Eds., D. Sperling and J. Cannon, Springer, 2009.
559. Sappok, A., Wong, V.W., “Lubricant-Derived Ash Properties and Their Effects on Diesel Particulate Filter Pressure Drop Performance,” ICEF2009-14080, Proceedings of the ASME Internal Combustion Engine Division 2009 Fall Technical Conference, Lucerne, Switzerland, September 27-30, 2009, J. Eng. Gas Turbines Power, Vol. 133, No. 3, March, 2011.
560. Mittal, V., and Heywood, J.B., “The Shift in Relevance of Fuel RON and MON to Knock Onset in Modern SI Engines Over the Last 70 Years,” SAE Paper 2009-01-2622, SAE

- 2009 Powertrains, Fuels & Lubricants Meeting, San Antonio, TX, November 2-4, 2009; SAE Int. J. Engines 2(2): January 10, 2009. Also published in SAE Int. J. Engines, Number: V118-3; April 1, 2010.
561. Wildman, C., Scaringe, R.J., Cheng, W.K., "On the Maximum Pressure Rise Rate in Boosted HCCI Operation," SAE Paper 2009-01-2727, SAE 2009 Powertrains, Fuels & Lubricants Meeting, San Antonio, TX, November 2-4, 2009.
546. Kar, K., Cheng, W.K., "Speciated Engine-Out Organic Gas Emissions from a PFI-SI Engine Operating on Ethanol/Gasoline Mixtures," SAE Paper 2009-01-2673, SAE 2009 Powertrains, Fuels & Lubricants Meeting, San Antonio, TX, November 2-4, 2009. Also published in SAE Int. J. Fuels Lubr. 2(2): 91-101, March 2010.
547. Schäfer, A., Jacoby, H.D., Heywood, J.B., and Waitz, I.A., "The Other Climate Threat: Transportation," *American Scientist*, pp. 476-483, November-December 2009.
548. Kromer, M.A., Bandivadekar, A., and Evans, C., "Long-Term Greenhouse Gas Emission and Petroleum Reduction Goals: Evolutionary Pathways for the Light-Duty Vehicle Sector," Elsevier, *Energy*, Vol. 35, Issue 1, October, 2009.
549. Heywood, J., Baptista, P., Berry, I., Bhatt, K., Cheah, L., de Sisternes, F., Karplus, V., Keith, D., Khusid, M., MacKenzie, D., and McAulay, J., "An Action Plan for Cars: The Policies Needed to Reduce U.S. Petroleum Consumption and Greenhouse Gas Emissions," An MIT Energy Initiative Report, December, 2009.
550. K. Kar, W. Cheng, K. Ishii, "Effects of Ethanol Content on Gasohol PFI Engine Wide-Open-Throttle Operation," SAE Int. J. Fuels Lubr. 2(1): 895-901, 2009.
551. Mittal, V., Heywood, J.B., and Green, W.H., "The Underlying Physics and Chemistry behind Fuel Sensitivity," SAE paper 2010-01-0617, presented at the SAE World Congress, Detroit, MI, April 13-15, 2010. Also in SAE SP-2278. Also published in SAE Int., J. Fuels Lubr. Number: V119-4; published April 13, 2010.
552. McAulay, J., and Heywood, J.B., "Coordinated Strategies for Ethanol and Flex Fuel Vehicle Deployment: A Quantitative Assessment of the Feasibility of Biofuel Targets," SAE paper 2010-01-0735, presented at the SAE World Congress, Detroit, MI, April 13-15, 2010. Also published in *Advances in Alternative Energy and Fuels for the Transportation Sector*, 2010, Number SP-2292, published April 13, 2010. Also in SAE Int. J. Fuels Lubr., Number V119-4, Published August 30, 2010.
553. Cheah, L., Heywood, J.B., and Kirchain, R., "The Energy Impact of U.S. Passenger Vehicle Fuel Economy Standards," paper presented at IEEE International Symposium on Sustainable Systems and Technology Conference, Washington, D.C., May 17-19, 2010.
554. Heywood, J.B., "Assessing the Fuel Consumption and GHG Emissions of Future In-Use Vehicles," paper presented at the PEA-AIT International Conference on Energy and Sustainable Development (ESD 2010), Chiang Mai, Thailand, June 2-4, 2010.

555. R. J. Scaringe, C. B. Wildman, W.K. Cheng, "On the High Load Limit of Boosted Gasoline HCCI Engine Operating in NVO mode," *SAE Int. J. Engines*, 3(1): 35-45, August 2010.
556. Wildman, C.B., and Cheng, W.K., "The Effects of Charge Motion and Laminar Flame Speed on Late Robust Combustion in a Spark-Ignition Engine," *SAE Int. J. Engines*, 3(1):202-213, August 2010.
557. Wang, Y., Li, Y., Tian, T., 2010,"Exploring Operation Mechanisms of the Flexible Metal to Metal Face Seal: Part I - Numerical Modeling and Validations," *Tribology Transactions*, 53: 639-648, 2010.
558. Wang, Y., Tian, T., 2010,"Exploring Operation Mechanisms of the Flexible Metal to Metal Face Seal: Part II Scoring and Leakage Analysis," *Tribology Transactions*, 53: 649-657, 2010.
559. Liu, T., Nink, J., Merati, P., Tian, T., Li, Y., Shieh, T., 2010, "Deposition of micron liquid droplets on wall in impinging turbulent air jet", *Exp Fluids* (2010) 48:1037–1057.
560. D. Lee, and J.B. Heywood, "Effects of Secondary Air Injection During Cold Start of SI Engines," SAE paper 2010-01-2124, presented at the SAE 2010 Powertrains Fuels & Lubricants Meeting, Oct. 25, 2010; *SAE Jnl. of Engines*, V119-3EJ, December 2010.
561. Kodama, Y., Wong, V.W., "Study of On-Board Ammonia (NH₃) Generation for SCR Operation," SAE Paper 2010-01-0811, presented at the SAE World Congress, Detroit, MI, April 13-15, 2010, *SAE International Journal of Fuels and Lubricants*, Vol. 3, No. 1, p. 537-555, August, 2010.
562. Sappok, A., Wong, V.W., "Ash Effects on Diesel Particulate Filter Pressure Drop Sensitivity to Soot and Implications for Regeneration Frequency and DPF Control," SAE Paper 2010-01-0811, presented at the SAE World Congress, Detroit, MI, April 13-15, 2010, *SAE International Journal of Fuels and Lubricants*, Vol. 3, No. 1, p. 380-396, August, 2010.
563. K. Kar, W.K. Cheng, "Using Mass Spectrometry to Detect Ethanol and Acetaldehyde Emissions from a Direct Injection Spark Ignition Engine Operating on Ethanol/Gasoline Blends," SAE Paper 2011-01-1159, presented at the SAE World Congress, Detroit, MI, April 12-14, 2011.
564. I. Dimou, K. Kar, W.K. Cheng, "Particulate Matter Emissions from a Direct Injection Spark Ignition Engine under Cold Fast Idle Conditions for Ethanol-Gasoline Blends," SAE Paper 2011-01-1305, presented at the SAE World Congress, Detroit, MI, April 12-14, 2011. Also published in *SAE Int. J. Engines* 4(1):1738-1746, June 2011.

565. K. Cedrone, W.K. Cheng, S. Chahine, J. Williams, B. VanDerWege, "Fuel Effects on HCCI Operation in a Spark Assisted Direct Injection Gasoline Engine," SAE Paper 2011-01-1763, presented at the SAE World Congress, Detroit, MI, April 12-14, 2011.
566. Sappok, A., Wong, V., Morrow, R., Zisholtz, E., Doustar, I., and Govani, I., "Investigations of Ash Formation, Accumulation, and Distribution in Diesel Particulate Filters Using Lubricant Additive Tracers," ASME Paper ICEF2011-60072, Proceedings of ASME ICEF Fall Technical Conference, Morgantown, W. Virginia, October 2-5, 2011.
567. Cross, E., Sappok, A., Wong, V., et al., "Real-Time Measurements of Engine-Out Trace Elements: Application of a Novel Soot Particle Aerosol Mass Spectrometer for Emissions Characterization," ASME Paper ICEF2011-60100, Proceedings of ASME ICEF Fall Technical Conference, Morgantown, W. Virginia, October 2-5, 2011.
568. Liao, K., Tian, T., "The Investigation of Friction between Internal Combustion Engine Piston Ring Pack and Cylinder Liner Using Floating Liner Engine and Ring Pack Model," International Tribology Conference, Hiroshima, Japan, October 30– November 3, 2011.
569. Cheah, L., and Heywood, J.B., "Meeting U.S. Passenger Vehicle Fuel Economy Standards in 2016 and Beyond," Energy Policy, Vol. 39, Issue 1, p. 454-466, January, 2011.
570. Sappok, A., Wong, V., Morrow, R., Zisholtz, E., Doustar, I., and Govani, I., "Investigations of Ash Formation, Accumulation, and Distribution in Diesel Particulate Filters Using Lubricant Additive Tracers," ASME Paper ICEF2011-60072, Proceedings of ASME ICEF Fall Technical Conference, Morgantown, W. Virginia, October 2-5, 2011.
571. Liao, K., Tian, T., "The Investigation of Friction between Internal Combustion Engine Piston Ring Pack and Cylinder Liner Using Floating Liner Engine and Ring Pack Model," International Tribology Conference, Hiroshima, Japan, October 30-November 3, 2011.
572. Bastani, P., Heywood, J.B., Hope, C. "Fuel use and CO2 emissions under uncertainty from light-duty vehicles in the US to 2050," American Society of Mechanical Engineers. ESFuelCell2011-54306, presented at the 2011 Energy Sustainability Conference, August 7-10, 2011.
573. Hoepke, B., Jannsen, S., Kasseris, E., and Cheng, W.K., "EGR Effects on Boosted SI Engine Operation and Knock Integral Correlation," SAE 2012-01-0707. Presented at the April 2012 SAE World Congress. Also published in SAE Int. J. Engines, 5(2): 547-559, May 2012.
574. Kasseris, E., and Heywood, J.B., "Charge Cooling Effects on Knock Limits in SI DI Engines Using Gasoline/Ethanol Blends: Part 1-Quantifying Charge Cooling", SAE 2012-01-1275. Presented at the April 2012 SAE World Congress.

575. Kasseris, E., and Heywood, J.B., "Charge Cooling Effects on Knock Limits in SI DI Engines Using Gasoline/Ethanol Blends: Part 2-Effective Octane Numbers", SAE 2012-01-1284, presented at the April 2012 SAE World Congress. Also published in SAE Int. J. Fuels Lubr., Number: V121-4EJ; Published: 2012-05-20. SAE Int. J. Fuels Lubr., Number: V121-4; Published: 2013-02-15. EJ is online subscription.
576. Bastani, P., Heywood, J.B., and Hope, C., "Potential for meeting the US. CAFE (Light-Duty Vehicle Fuel Economy) Challenge in 2016 and 2025: Assessment in an Uncertain World," An MIT Sloan Automotive Laboratory and MIT Energy Initiative Report, 2012.
577. Bastani, P., Heywood, J.B., and Hope, C., "Meeting the Challenge: A Stochastic Assessment of the U.S. Light-Duty Vehicle Fuel Economy Standards," 2012 Energy Sustainability Conference, San Diego, CA, July 23-26, 2012.
578. Sappok, A., Kamp, C., and Wong, V., "Sensitivity Analysis of Ash Packing and Distribution in Diesel Particulate Filters to Transient Changes in Exhaust Conditions," SAE Paper 2012-01-1093, Presented at the SAE World Congress, Detroit, MI, April 24-26, 2012. Also published in SAE Int. J. Fuels Lubr., 5(2):733-750, May 2012.
579. Kamp, C., Sappok, A., and Wong, V., "Soot and Ash Deposition Characteristics at the Catalyst-Substrate Interface and Intra-layer Interactions in Aged Diesel Particulate Filters Illustrated Using Focused Ion Beam (FIB) Milling," SAE Paper 2012-01-0836, Presented at the SAE World Congress, Detroit, MI, April 24-26, 2012. Also published in SAE Int. J. Fuels Lubr., 5(2): 696-710, May 2012.
580. Liao, K., Chen, H., Tian, T., "The Study of Friction between Piston Ring and Different Cylinder Liners using Floating Liner Engine - Part 1," SAE Paper 2012-01-1334, Presented at the SAE World Congress, Detroit, MI, April 24-26, 2012.
581. H. Chen, K. Liao, T. Tian, "A Numerical and Experimental Study of Twin-land Oil Control Ring Friction in Internal Combustion Engines Part 2," SAE Paper 2012-01-1321, Presented at the SAE World Congress, Detroit, MI, April 24-26, 2012.
582. Sappok, A., Munnis, S., and Wong, V., "Individual and Synergistic Effects of Lubricant Additive Components on Diesel Particulate Filter Ash Accumulation and Performance," ASME Paper ICES2012-81237, Proceedings of the ASME ICES Technical Conference, Torino, Italy, May 6-9, 2012.
583. Cross, E.S., Sappok, A., Fortner, E.C., Hunter, J.F., Jayne, J.T., Brooks, W.A., Onasch, T.B., Wong, V.W., Trimborn, A., Worsnop, D.R., Krol, J.H., "Real-Time Measurements of Engine-Out Trace Elements: Application of a Novel Soot Particle Aerosol Mass Spectrometer for Emissions Characterization," Journal of Engineering for Gas Turbines and Power, Vol. 134, Issue 7, 072801, July 1, 2012.
584. Zoepf, S., and Heywood, J., "Characterizations of Deployment Rates in Automotive Technology," SAE paper 2012-01-1057, SAE Int. J. Passeng. Cars – Electron. Electr. Syst. 5(2): 2012.

585. Bastani, P., Heywood, J.B., and Hope, C., "A Forward-Looking Stochastic Fleet Assessment Model for Analyzing the Impact of Uncertainties on Light-Duty Vehicles' Fuel Use and Emissions," SAE paper 2012-01-0647, SAE Int. J. Engines 5(2): 2012.
586. Bastani, P., Heywood, J.B., and Hope, C., "The Effect of Uncertainty on US Transport-Related GHG Emissions and Fuel Consumption out to 2050," Transportation Research Part A, 46, pp. 517-548, 2012.
587. MacKenzie, D., and Heywood, J., "Acceleration Performance Trends and Evolving Relationship Trends Between Power, Weight, and Acceleration in U.S. Light-Duty Vehicles: Linear Regression Analysis," TRB Paper No. 12-1475, Transportation Research Board 92st Annual Meeting, Washington, D.C. January 2012. Transportation Research Record: Journal of the Transportation Research Board, No. 2287, Transportation Research Board of the National Academies, Washington, D.C., pp. 122-131, 2012.
588. Baptista, P.C., Silva, C.M., Farias, T.L., and Heywood, J.B., "Energy and Environmental Impacts of Alternative Pathways for the Portuguese Road Transportation Sector," Elsevier, Energy Policy 51, pp. 802-815, 2012.
589. Yang, B., Li, S., Zheng, Z., Yao, M., Cheng, W., "A Comparative Study on Different Dual-Fuel Combustion Modes Fuelled with Gasoline and Diesel," SAE Paper 2012-01-0694, 2012.
590. Dimou, I., Sappok, A., Wong, V., Fujii, S. et al., "Influence of Material Properties and Pore Design Parameters on Non-Catalyzed Diesel Particulate Filter Performance with Ash Accumulation," SAE Technical Paper 2012-01-1728, 2012, doi:10.4271/2012-01-1728.
591. Costanzo, V., and Heywood, J.B., "Effect of In-Cylinder Liquid Fuel Films on Engine-Out Unburned Hydrocarbon Emissions for an SI Engine," SAE Paper 2012-01-1712, SAE Powertrain, Fuels, and Lubricants Meeting in Malmo, Sweden, 9/18-20/2012.
592. Smith, P., Cheng, W.K., "Assessing the Loss Mechanisms Associated with Engine Downsizing, Boosting and Compression Ratio Change," SAE Paper 2013-01-0929, 2013.
593. Maria, A., Cheng, W.K., Kar, K., and Cannella, W. "Understanding Knock Metric for Controlled Auto-Ignition Engines," SAE Int. J. Engines 6(1):533-540; doi:10.4271/2013-01-1658.
594. Cedrone, K., Cheng, W.K., "Using Valve Timing and Exhaust Back Pressure to Improve Catalyst Warm-up time," SAE Paper 2013-01-2656, 2013.
595. Lee, J. and Cheng, W., "Engine Friction Accounting Guide and Development Tool for Passenger Car Diesel Engines," SAE Int. J. Engines 6(4): 1970-1977, December 2013, doi:10.4271/2013-01-2651.

596. Sappok, A., Govani, I., Kamp, C., Wang, Y. et al., "In-Situ Optical Analysis of Ash Formation and Transport in Diesel Particulate Filters During Active and Passive DPF Regeneration Processes," SAE Int. J. Fuels Lubr.6(2):336-349, 2013, doi:10.4271/2013-01-0519.
597. Wang, Y., Wong, V., Sappok, A., and Munnis, S., "The Sensitivity of DPF Performance to the Spatial Distribution of Ash Inside DPF Inlet Channels," SAE Technical Paper 2013-01-1584, 2013, doi:10.4271/2013-01-1584.
598. Kamp, C., "Investigations of Automotive Aftertreatment Component Aging by Focused Ion Beam (FIB) Milling: The Catalyst-Substrate Interface and intra- and inter-Layer Interactions," Materials Research Society, MRS Technical Bulletin, 2013.
599. Picard, M., Baelden, C., Tian, T., Nishino, T., Arai, E., and Hidaka, H., "Oil Transport Cycle Model for Rotary Engine Oil Seals", SAE Paper 2014-01-1664, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
600. Sang, W., Cheng, W., and Maria, A., "The Nature of Heat Release in Gasoline PPCI Engines," SAE Paper 2014-01-1295, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
601. Jo, Y., Lewis, R., Bromberg, L., and Heywood, J., "Performance Maps of Turbocharged SI Engines with Gasoline-Ethanol Blends: Torque, Efficiency, Compression Ratio, Knock Limits, and Octane," SAE Paper 2014-01-1206, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
602. Kamp, C.J., Sappok, A., Wang, Y., Bryk W., Rubin, A., and Wong, V., "Direct Measurements of Soot/Ash Affinity in the Diesel Particulate Filter by Atomic Force Microscopy and Implications for Ash Accumulation and DPF Degradation", SAE Paper 2014-01-1486, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014. Also published in SAE Int. J. Fuels Lubr., 7(1): 307-316, April 2014.
603. Molewyk, M., Wong, V., and James, C., "In Situ Control of Lubricant Properties for Reduction of Power Cylinder Friction through Thermal Barrier Coating", SAE Paper 2014-01-1659, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
604. Picard, M., Hidaka, H., Tian, T., Nishino, T., Arai, E., and Ohkubo, M., "Visualization of the Rotary Engine Oil Transport Mechanisms", SAE Paper 2014-01-1665, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
605. Plumley, M., Wong, V., Molewyk, M., and Park, S. "Optimizing Base Oil Viscosity Temperature Dependence for Power Cylinder Friction Reduction", SAE Paper 2014-01-1658, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014.
606. Chow, E.W., and Heywood, J.B., "Benefits of Higher Octane Standard Gasoline for the Light-Duty Vehicle Fleet," SAE paper 2014-01-1961, April 2014.
607. Speth, R.L., Chow, E.W., Malina, R., Barrertt, S.E.H., Heywood, J.B., and Green, W.H.,

- “Economic and Environmental Benefits of Higher-Octane Gasoline,” *Environ. Sci. Technol.*, v. 48, pp. 6561-6568, 2014.
608. Smith, P., Heywood, J.B., and Cheng, W.K., “Effects of Compression Ratio on Spark-Ignited Engine Efficiency,” SAE Paper 2014-01-2599, 2014.
609. Smith, P., Cheng, W.K., and Heywood, J.B., “Crevice Volume Effect on Spark Ignition Engine Efficiency,” SAE Paper 2014-01-2602, 2014.
610. Sappok, A., Wang, Y., Wang, R.Q., Kamp, C.J., and Wong, V., “Theoretical and Experimental Analysis of Ash Accumulation and Mobility in Ceramic Exhaust Particulate Filters and Potential for Improved Ash Management”, SAE Paper 2014-01-1517, Presented at the SAE World Congress, Detroit, MI, April 8-10, 2014. Also published in *SAE Int. J. Fuels Lubr.*, 7(2):511-524, June 2014.
611. Maria, A., Cheng, W., Cannella, W., and Kar, K., “Fuel Factors Affecting the High-Load Limit of a Temperature Stratified Controlled Auto-Ignition Engine,” SAE Technical Paper 2014-01-1287, 2014.
612. Ketterer, J. and Cheng, W., “On the Nature of Particulate Emissions from DISI Engines at Cold-Fast-Idle,” *SAE Int. J. Engines* 7(2): 986-994, June 2014.
613. Picard, M., Baelden, C., Tian, T., Nishino, T., Arai, E., and Hidaka, H., “Oil Transport Cycle Model for Rotary Engine Oil Seals,” *SAE Int. J. Engines*, August 2014, 7:1466-1476; doi: 10.4271/2014-01-1664.
614. Picard, M., Hidaka, H., Tian, T., Nishino, T., Arai, E., and Ohkubo, M., “Visualization of the Rotary Engine Oil Transport Mechanisms,” *SAE Int. J. Engines*, August 2014, 7:1477-1488; doi: 10.4271/2014-01-1665.
615. Cedrone, K. and Cheng, W., “SI Engine Control in the Cold-Fast-Idle Period for Low HC Emissions and Fast Catalyst Light Off,” *SAE Int. J. Engines* 7(2):2014.
616. Yang, B., Yao, M., Cheng, W.K., Li, Y., Zheng, Z. and Li, S. “Experimental and Numerical Study on Different Dual-Fuel Combustion Modes Fuelled with Gasoline and Diesel,” *Applied Energy* 113 (2014), pp 722–733, doi: 10.1016/2013.07.034.
617. Baelden, C. and Tian, T., “A Dual Grid Curved Beam Finite Element Model of Piston Rings for Improved Contact Capabilities”, *SAE Int. J. Engines* 7(1):156-171, May 2014.
618. Jorgensen, J., Murray, T., Sappok, A., Wong, V., Boerensen, C., Lambert, C., Pakko, J., and Warner, J., “The Effect of Ash Accumulation on Gasoline Particulate Filters: A Comparison between Laboratory and Field Aged Samples,” ASME ICEF2014-5473, ASME Internal Combustion Engines Division Fall Technical Conference, Columbus, IN, October 19-22, 2014.
619. Kamp, C., Seferis, J., Arnold, M., and Drakonakis, V., “Featherweight Composites Manufactured by Selective Nanobridization with Potential Applications in the

Automotive Industry,” SAE Int. J. Mater. Manf. 7(3):662-670, 2014, doi:10.4271/2014-01-1061.

12/2014-1