CURRICULUM VITAE

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EDUCATION

Ph. D. in Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ, 1994.

M. S. in Mechanical Engineering, Seoul National University, Seoul, South Korea, 1988

B. S. in Mechanical Engineering, Seoul National University, Seoul, South Korea, 1986

EXPERIENCE

Sep. 2005 – present: Associate Professor, Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI.

Jan. 2000 – Aug. 2005: Assistant Professor, Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI.

Dec. 1996 – Dec. 1999: Postdoctoral Researcher, Combustion Research Facility, Sandia National Laboratories, Livermore, CA.

Oct. 1994 – Oct. 1996: Research Fellow, Center for Turbulence Research, Stanford University, Stanford, CA.

Sep. 1989 – Sep. 1994: Teaching/Research Assistant, Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ.

HONORS AND AWARDS

SAE Ralph R. Teetor Educational Award, April 2006.

Faculty Development Fund, Center for Research on Learning and Teaching,

University of Michigan, January 2004.

National Science Foundation, CAREER Award, January 2002.

Grumman Graduate Prize for Academic Excellence, Princeton University, September 1990.

Graduated *Cum Laude*, Seoul National University, Seoul, South Korea, February 1986.

MEMBERSHIP

The Combustion Institute
Society of Automotive Engineers (SAE)
American Society of Mechanical Engineers (ASME)
Society for Industrial and Applied Mathematics (SIAM)

American Institute of Aeronautics and Astronautics (AIAA)

RESEARCH INTERESTS

Combustion; computational methods for reacting flows; direct numerical simulation; large eddy simulation; turbulent combustion modeling; flame structure/dynamics; ignition/extinction; supersonic combustion; pollutant reduction and control; combustion chemistry; reduced mechanisms; combustion synthesis of materials; reacting flows in microsystems

PUBLICATIONS

Reviewed Papers:

1. Im, H. G. and Chung, S. H., 1989, "Effect of Burnt Gas Mixing on the Extinction of Interacting Flames Premixed," *Transactions of Korea Society of Automotive Engineering* (in Korean), **11**(3), pp. 37-48.
2. Im, H. G. and Chung, S. H., 1989, "On the Chracteristics of Partially-Premixed Diffusion Flame in a Strained Flow Field," *KSME Journal*, **3**(2), pp. 139-145.
3. Im, H. G., Law, C. K., and Axelbaum, R. L., 1990, "Opening of the Burke-Schumann Flame Tip and the Effects of Curvature on Diffusion Flame Extinction," *Proceedings of the Combustion Institute*, **23**, pp. 551-558.
4. Im, H. G., Bechtold, J. K., and Law, C. K., 1993, "Analysis of Thermal Ignition in Supersonic Flat-Plate Boundary Layers," *Journal of Fluid Mechanics*, **249**, pp. 99-120.
5. Im, H. G., Chao, B. H., Bechtold, J. K., and Law, C. K., 1994, "Analysis of Thermal Ignition in the Supersonic Mixing Layer," *AIAA Journal*, **32**, pp. 341-349.
6. Im, H. G., Law, C. K., Kim, J. S., and Williams, F. A., 1995, "Response of Counterflow Diffusion Flames to Oscillating Strain Rates," *Combustion and Flame*, **100**, pp. 21-30.
7. Im, H. G., Bechtold, J. K., and Law, C. K., 1995, "Counterflow Diffusion Flames with Unsteady Strain Rates," *Combustion Science and Technology*, **106**, pp. 345-361.
8. Im, H. G., Bechtold, J. K., and Law, C. K., 1996, "Response of Counterflow Premixed Flames to Oscillating Strain Rates," *Combustion and Flame*, **105**, pp. 358-372.
9. Im, H. G., Helenbrook, B. T., Lee, S. R., and Law, C. K., 1996, "Ignition in the Supersonic Hydrogen/Air Mixing Layer with Reduced Reaction Mechanisms," *Journal of Fluid Mechanics*, **322**, pp. 275-296.
10. Im. H. G., Lund, T. S., and Ferziger, J. H., 1997, "Large Eddy Simulation of Turbulent Front Propagation with Dynamic Subgrid Models," *Physics of Fluids*, **9**(12), pp. 3826-3833.
11. Helenbrook, B. T., Im, H. G., and Law, C. K., 1998, "Theory of Radical-Induced Ignition of Counterflowing Hydrogen versus Oxygen at High Temperatures," *Combustion and Flame*, **112**, pp. 242-252.
12. Chen, J. H. and Im, H. G., 1998, "Correlation of Flame Speed with Stretch in Turbulent

Premixed Methane/Air Flames," *Proceedings of the Combustion Institute*, **27**, pp. 819-826.

13. Im, H. G., Chen, J. H., and Law, C. K., 1998, "Ignition of Hydrogen/Air Mixing Layer in Turbulent Flows," *Proceedings of the Combustion Institute*, **27**, pp. 1047-1056.

14. Im, H. G., Chen, J. H., and Chen, J.-Y., 1999, "Chemical Response of Methane/Air Diffusion Flames to Unsteady Strain Rate," *Combustion and Flame*, **118**, pp. 204-212.

15. Im, H. G., and Chen, J. H., 1999, "Structure and Propagation of Triple Flames in Partially Premixed Hydrogen/Air Mixtures," *Combustion and Flame*, **119**, pp. 436-454.

16. Im, H. G., 2000, "Numerical Studies of Transient Opposed-Flow Flames using Adaptive Time Integration," *KSME International Journal*, v. 14, pp. 103-112.

17. Chen, J. H. and Im, H. G., 2000, "Stretch Effects on the Burning Velocity of Turbulent Premixed Hydrogen-Air Flames," *Proceedings of the Combustion Institute*, **28**, pp. 211-218.

18. H. G. Im and J. H. Chen, 2000, "Effects of Flow Transients on the Burning Velocity of Hydrogen-Air Premixed Flames," *Proceedings of the Combustion Institute*, **28**, pp. 1833-1840.

19. Im, H. G., Raja, L. L., Kee, R. J., and Petzold, L. R., 2000, "A Numerical Study of Transient Ignition in Counterflow Nonpremixed Methane-Air Flame Using Adaptive Time Integration," *Combustion Science and Technology*, **158**, pp. 341-363.

20. Im, H. G. and Chen, J. H., 2001, "Effects of Flow Strain on Triple Flame Propagation," *Combustion and Flame*, **126**, pp. 1384-1392.

21. Im, H. G. and Chen, J. H., 2002, "Preferential Diffusion Effects on the Burning Rate of Interacting Turbulent Premixed Hydrogen-Air Flames," *Combustion and Flame*, **131**, pp. 246-258.

22. Sankaran, R. and Im, H. G., 2002, "Dynamic Flammability Limits of Methane-Air Premixed Flames with Mixture Composition Fluctuations," *Proceedings of the Combustion Institute*, **29**, pp. 77-84.

23. Mason, S. D., Chen, J. H., and Im, H. G., 2002, "Effects of Unsteady Scalar Dissipation Rate on Ignition of Nonpremixed Hydrogen/Air Mixtures in Counterflow," *Proceedings of the Combustion Institute*, **29**, 1629-1636.

24. Kang, S. H., Im, H. G., and Baek, S. W., 2003, "A Computational Study of Saffman-Taylor Instability in Premixed Flames," *Combustion Theory and Modelling*, **7**, pp. 343-364.

25. Srinivas, S., Dhingra, A., Im, H. G., and Gulari, E., 2004, "A Scalable Silicon Microreactor for Preferential CO Oxidation: Performance Comparison with a Tubular Packed-Bed Microreactor," *Applied Catalysis A: General*, **274**, 285-293.

26. Yoo, C. S. and Im, H. G., 2005, "Transient Dynamics of Edge Flames in a Laminar Nonpremixed Hydrogen-Air Counterflow," *Proceedings of the Combustion Institute*, **30**, 349-356.

27. Sankaran, R., Im, H. G., Hawkes, E. R., and Chen, J. H., 2005, "The Effects of Nonuniform Temperature Distribution on the Ignition of a Lean Homogeneous Hydrogen-Air Mixture,"

Proceedings of the Combustion Institute, **30**, 875-882.

28. Hong, S., Wooldridge, M. S., Im, H. G., Assanis, D. N., and Pitsch, H., 2005, "Development and Application of a Comprehensive Soot Model for Computational Engine Studies," *Combustion and Flame*, **143**, 11-26.

29. Sankaran, R. and Im, H. G., 2005, "Characteristics of Auto-Ignition in a Stratified Iso-Octane Mixture with Exhaust Gases under HCCI Conditions," *Combustion Theory and Modelling*, **9**, 417-432.

30. Yoo, C. S., Wang, Y., Trouve, A., and Im, H. G., 2005, "Characteristic Boundary Conditions for Direct Simulations of Turbulent Counterflow Flames," *Combustion Theory and Modelling*, **9**, 617-646.

31. Li, J. and Im, H. G., 2006, "Extinction Characteristics of Catalyst-Assisted Combustion in a Stagnation-Point Flow Reactor," *Combustion and Flame*, in press.

32. Kang, S. H., Baek, S. W., and Im, H. G., 2006, "Effects of Heat and Momentum Losses on the Stability of Premixed Flames in a Narrow Channel," *Combustion Theory and Modelling*, in press.

33. Sankaran, R., and Im, H. G., 2006, "Effects of Hydrogen Addition on the Flammability Limit of Stretched Methane-Air Premixed Flames," *Combustion Science and Technology*, in press.

34. Chen, J. H., Hawkes, E. R., Sankaran, R., Im, H. G., and Mason, S. D., 2006, "Ignition Front Propagation in a Constant Volume with Temperature Inhomogeneities,", *Combustion and Flame*, in press.

35. Hong, S., Wooldridge, M. S., Im, H. G., Assanis, D. N., and Kurtz, E., 2005, "Modeling of Diesel Combustion, Soot and NO Emissions Based on a Modified Eddy Dissipation Concept," *Combustion Science and Technology,* submitted.

36. Yoo, C. S. and Im, H. G., 2005, "Characteristic Boundary Conditions for Simulations of Compressible Reacting Flows with Multi-Dimensional, Viscous, and Reaction Effects," *Combustion Theory and Modellings*, submitted.

37. Sankaran, R., Im, H. G., and Hewson, J. C., 2005, "Analytical Model for Auto-Ignition in a Thermally Stratified HCCI Engines," *Combustion Science and Technology*, submitted.

38. Yoo, C. S. and Im, H. G., 2006, "Transient Soot Dynamics in Turbulent Nonpremixed Ethylene-Air Counterflow Flames," *Proceedings of the Combustion Institute*, **31**, submitted.

39. Li, J. and Im, H. G., 2006, "Effects of Dilution on the Extinction Characteristics of Strained Lean Premixed Flames Assisted by Catalytic Reaction," *Proceedings of the Combustion Institute*, **31**, submitted.

40. Chernovsky, M. K., Atreya, A., and Im, H. G., "Effect of CO_2 Diluent on Fuel versus Oxidizer Side of Spherical Diffusion Flames in Microgravity," *Proceedings of the Combustion Institute*, **31**, submitted.

Other Publications:

1. Im, H. G., "Study of Turbulent Premixed Flame Propagation using Laminar Flamelet Model," 1995, *Annual Research Briefs - 1995*, Center for Turbulence Research, NASA Ames-Stanford University.

2. Bourlioux, A., Im, H. G., and Ferziger, J. H., 1996, "A Dynamic Subgrid-Scale Model for LES of the G-Equation," *Proceedings of the Summer Program - 1996*, Center for Turbulence Research, NASA Ames-Stanford University.

3. Im, H. G., Lund, T. S., and Ferziger, J. H., 1996, "Dynamic Models for LES of Turbulent Front Propagation with a Spectral Method," *Annual Research Briefs - 1996*, Center for Turbulence Research, NASA Ames-Stanford University.

4. Im, H. G., Raja, L. L., Kee, R. J., Lutz, A. E., and Petzold, L. R., 2000, "Opus: a Fortran Program for Unsteady Opposed-Flow Flames," *Sandia Report*, SAND2000-8211, Sandia National Laboratories, Livermore, CA.

5. Hong, S., Assanis, D. N., Wooldridge, M. S., Im, H. G., Kurtis, E., and Pitsch, H., 2004, "Modeling of Diesel Combustion and NO Emissions with a Modified Eddy Dissipation Concept," *SAE Paper*, 2004-01-0107.

PRESENTATIONS

1. Im, H. G., Law, C. K., and Axelbaum, R. L., 1990, "Opening of the Burke-Schumann Flame Tip and the Effects of Curvature on Diffusion Flame Extinction," *Twenty-Third Symposium (International) on Combustion*, The Combustion Institute, University of Orl'eans, France, July 22-27, 1990.

2. Im, H. G., Chao, B. H., Bechtold, J. K., and Law, C. K., 1993, "Analysis of Thermal Ignition in a Supersonic Mixing Layer," *31st Aerospace Sciences Meeting & Exhibit*, Paper No. 93-0449, Reno, NV, Jan. 11-14.

3. Im, H. G. and Law, C. K., 1993, "Response of Counterflow Diffusion Flame to Oscillating Strain Rates," *Technical Meeting of the Eastern States Section of the Combustion Institute*, Princeton University, Princeton, NJ, Oct. 25-27.

4. Im, H. G., Lee, S. R., and Law, C. K., 1994, "Ignition in the Supersonic Hydrogen/Air Mixing Layer with Reduced Reaction Mechanisms," *32nd Aerospace Sciences Meeting & Exhibit*, Paper No. 94-0548, Reno, NV, Jan. 10-13.

5. Im, H. G., Law, C. K., Kim, J. S., and Williams, F. A., 1994, "`Response of Counterflow Diffusion Flames to Oscillating Strain Rates," *Twenty-Fifth Symposium (International) on Combustion*, The Combustion Institute, University of California, Irvine, CA, July 31-Aug. 5.

6. Helenbrook, B. T., Im, H. G., and Law, C. K., 1994, "Radical-Induced Ignition of Counterflowing Hydrogen versus Oxygen at High Temperatures," *Technical Meeting of the Eastern States Section of the Combustion Institute*, Clearwater Beach, FL, Dec. 4-7.

7. Im, H. G., Bechtold, J. K., and Law, C. K., 1995, "Counterflow Diffusion Flames with Unsteady Strain Rates," *33rd Aerospace Sciences Meeting & Exhibit*, Paper No. 95-0128, Reno, NV, Jan. 9-12.

8. Bourlioux, A., Im, H. G., and Ferziger, J. H., 1996, "Dynamic Subgrid-Scale Model for LES based on the G-equation," *49th Annual Meeting of Division of Fluid Dynamics of the American Physical Society*, Syracuse, NY, Nov. 24-26.

9. Im, H. G., Lund, T. S., and Ferziger, J. H., 1997, "Large Eddy Simulation of Turbulent Front Propagation with Dynamic Subgrid Models," *1997 Spring Meeting of the Western States Section/The Combustion Institute*, Sandia National Laboratories, Livermore, CA, April 14-15.

10. Im, H. G., Chen, J. H., and Chen, J.-Y., 1997, "Chemical Response of Methane/Air Diffusion Flames to Unsteady Strain Rate," *1997 Fall Meeting of the Western States Section/The Combustion Institute*, South Coast Air Quality Management District Headquarters, Diamond Bar, CA, Oct. 23-24.

11. Chen, J. H. and Im, H. G., 1997, "Correlation of Flame Speed with Stretch in Turbulent Premixed Methane/Air Flames," *Technical Meeting of the Eastern States Section of the Combustion Institute*, Hartford, CT, Oct. 27-29. 1997; also presented at *50th Annual Meeting of Division of Fluid Dynamics of the American Physical Society*, San Francisco, CA, Nov. 23-25.

12. Im, H. G. and Chen, J. H., 1998, "Structure and Propagation of Triple Flames in Partially Premixed Hydrogen/Air Mixtures," *1998 Spring Meeting of the Western States Section/The Combustion Institute*, University of California, Berkeley, CA, Mar. 23-24.

13. Chen, J. H. and Im, H. G., 1998, "Correlation of Flame Speed with Stretch in Turbulent Premixed Methane/Air Flames," *Seventh International Conference on Numerical Combustion*, St. John's College, York, England, Mar. 30-April. 1.

14. Im, H. G., Chen, J. H., and Law, C. K., 1998, "Ignition of Hydrogen/Air Mixing Layer in Turbulent Flows," *Seventh International Conference on Numerical Combustion*, St. John's College, York, England, Mar. 30-April. 1.

15. Chen, J. H. and Im, H. G., 1998, "Correlation of Flame Speed with Stretch in Turbulent Premixed Methane/Air Flames," *Twenty-Seventh Symposium (International) on Combustion*, The Combustion Institute, University of Colorado at Boulder, Aug. 2-7.

16. Im, H. G., Chen, J. H., and Law, C. K., 1998, "Ignition of Hydrogen/Air Mixing Layer in Turbulent Flows," *Twenty-Seventh Symposium (International) on Combustion*, The Combustion Institute, University of Colorado at Boulder, Aug. 2-7.

17. Chen, J. H. and Im, H. G., 1999, "Stretch Effects on Various Flame Speeds in Turbulent Premixed Hydrogen-Air System," *Joint Meeting of the United States Sections*, The Combustion Institute, The George Washington University, Washington, DC, March 15-17.

18. Im, H. G. and Chen, J. H., 1999, "Direct Numerical Simulation of Compressible Reacting Flows with Detailed Chemistry," *Reduced Mechanisms in Combustion Workshop*, Argonne National Laboratory, Argonne, Illinois, June 2-4.

19. Im, H. G., Raja, L. L., and Kee, R. J., 1999, "A Numerical Study of Transient Ignition in Opposed-Flow Non-Premixed Combustion using Adaptive Time Integration," Paper No. 118, *17th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Heidelberg, Germany, July 25-30.

20. Mellado, D. J., Sanchez, A. L., Kim, J. S., and Im, H. G., 1999, "High-Temperature Radical Growth in the Hydrogen-Oxygen Counterflow Mixing Layer," Paper No. 117, *17th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Heidelberg, Germany, July 25-30.

21. Im, H. G. and Chen, J. H., 2000, "Direct Numerical Simulation of Hydrogen-Air Edge Flames," *Eighth International Conference on Numerical Combustion*, Amelia Island, Florida, March 5-8.

22. Chen, J. H. and Im, H. G., 2000, "Unsteady Stretch Effects on Various Flame Speeds in Turbulent Premixed Hydrogen/Air Flames," *Eighth International Conference on Numerical Combustion*, Amelia Island, Florida, March 5-8.

23. Im, H. G. and Chen, J. H., 2000, "Effects of Flow Transients on the Burning Velocity of Hydrogen-Air Premixed Flames," *Technical Meeting of the Central States Section*, The Combustion Institute, Indianapolis, Indiana, April 16-18.

24. Im, H. G. and Chen, J. H., 2000, "Effects of Flow Transients on the Burning Velocity of Hydrogen-Air Premixed Flames," *28th International Symposium on Combustion*, The Combustion Institute, Edinburgh, Scotland, July 31 – August 4.

25. Chen, J. H. and Im, H. G., 2000, "Stretch Effects on the Burning Velocity of Turbulent Premixed Hydrogen-Air Flames," *28th International Symposium on Combustion*, The Combustion Institute, Edinburgh, Scotland, July 31 – August 4.

26. Im, H. G. and Chen, J. H., 2001, "Direct Numerical Simulation of Turbulent Premixed Flame Interaction Using Parallel Computing," *First MIT Conference on Computational Solid and Fluid Mechanics*, Cambridge, Massachusetts, June 12-15.

27. Im, H. G. and Chen, J. H., 2001, "Direct Numerical Simulation of Turbulent Premixed Flame Interaction Using Parallel Computing," *35th National Heat Transfer Conference*¸ Anaheim, California, June 10-12.

28. Mason, S. D., Chen, J. H., and Im, H. G., 2001, "Effects of Unsteady Scalar Dissipation Rates on the Ignition of Hydrogen/Air Diffusion Flames," *American Physical Society 54th Meeting of the Division of Fluid Dynamics*, San Diego, California, November 18-20.

29. Im, H. G. and Chen, J. H., 2001, "A Numerical Study of Turbulent Premixed Flame Interaction," *Technical Meeting of the Eastern States Section*, The Combustion Institute, Hilton Head Island, South Carolina, December 3-5.

30. Im, H. G., and Kim, J. S., 2002, "Dynamics of Freely-Propagating Premixed Flame Edges," *Ninth International Conference on Numerical Combustion*, Sorrento, Italy, April 7-10.

31. Sankaran, R. and Im, H. G., 2002, "Dynamic Flammability Limits of Methane-Air Premixed Flames with Mixture Composition Fluctuations," *29th Symposium on Combustion*, The Combustion Institute, Hokkaido, Japan, July 21-26.

32. Mason, S. D., Chen, J. H., and Im, H. G., 2002, "Effects of Unsteady Scalar Dissipation Rate on Ignition of Nonpremixed Hydrogen/Air Mixtures in Counterflow," *29th Symposium on Combustion*, The Combustion Institute, Hokkaido, Japan, July 21-26.

33. Kang, S. H., Im, H. G., and Baek, S. W., 2002, "A Computational Study of Saffman-Taylor Instability in Premixed Combustion," *29th Symposium on Combustion*, Work-In-Progress Poster 15-1480, The Combustion Institute, Hokkaido, Japan, July 21-26.

34. Yoo, C. S. and Im, H. G., 2003, "A Computational Study on the Dynamics of Counterflow Hydrogen-Air Edge Flames," *3rd Joint Meeting of the U.S. Sections of the Combustion Institute*, The Combustion Institute, March 16-19, University of Illinois at Chicago, Chicago, IL.

35. Sankaran, R. and Im, H. G., 2003, "Effects of Hydrogen Addition on the Flammability Limits of Stretched Methane/Air Premixed Flames," *3rd Joint Meeting of the U.S. Sections of the Combustion Institute*, The Combustion Institute, March 16-19, University of Illinois at Chicago, Chicago, IL.

36. Kang, S. H., Im, H. G., and Baek, S. W., 2003, "Viscosity-Induced Instabilities of Premixed Flames in a Narrow Channel," *Fourth International Symposium on Scale Modeling*, Cleveland, Ohio, September 17-19.

37. Chen, J. H., Hawkes, E., Hewson, J. C., Sankaran, R., and Im, H. G., 2003, "The Effect of Turbulent Mixing on Compression Ignition of a Lean Hydrogen/Air Premixture, *Fall Meeting of the Western States Section*, The Combustion Institute, University of California, Los Angeles, CA, October 20-21.

38. Sankaran, R., Oh, T. K., and Im, H. G., 2003, "Ignition and Front Propagation in a Stratified Methane-Air Mixture with Exhaust Gases," *Technical Meeting of the Eastern States Section*, The Combustion Institute, Pennsylvania State University, University Park, PA, October 27-29.

39. Yoo, C. S. and Im, H. G., 2003, "Dynamics of Edge Flames in Laminar and Turbulent Nonpremixed Hydrogen-Air Counterflow," *Technical Meeting of the Eastern States Section*, The Combustion Institute, Pennsylvania State University, University Park, PA, October 27-29.

40. Kang, S. H., Im, H. G., and Baek, S. W., 2003, "Investigation of Saffman-Taylor Instability in Premixed Flame," *The Fourth Asia-Pacific Conference on Combustion*, Nanjing, China, November 23-26.

41. Sankaran, R., and Im, H. G., 2004, "Effects of Mixture Inhomogeneity on the Auto-Ignition of Reactants under HCCI Environment," *42nd Aerospace Sciences Meeting & Exhibit*, Paper No. 95-0128, Reno, NV, January 5-8.

42. Hong, S., Assanis, D. N., Wooldridge, M. S., Im, H. G., Kurtis, E., and Pitsch, H., 2004, "Modeling of Diesel Combustion and NO Emissions with a Modified Eddy Dissipation Concept," *SAE World Congress*, March 8-11.

43. Sankaran, R., Im, H. G., Hawkes, E. R., and Chen, J. H., 2004, "A Computational Study on the Ignition of a Lean Hydrogen-Air Mixture with Non-Uniform Temperature Distribution," *Spring Technical Meeting of the Central States Section*, The Combustion Institute, University of Texas at Austin, Austin, Texas, March 21-23.

44. Kang, S. H., Baek, S. W., and Im, H. G., 2004, "Effects of Heat Loss on the Viscous-Induced Instability of Premixed Flames in a Narrow Channel," *Tenth International Conference on*

Numerical Combustion, Sedona, Arizona, May 9-12.

45. Mingeaud, D., Im, H. G., and Kim, J. S., 2004, "Effects of Mixture Inhomogeneity on Turbulent Front Propagation," *Tenth International Conference on Numerical Combustion*, Sedona, Arizona, May 9-12.

46. Yoo, C. S. and Im, H. G., 2004, "Soft Inflow Boundary Conditions for Direct Numerical Simulation of Compressible Reacting Flows," *Tenth International Conference on Numerical Combustion*, Sedona, Arizona, May 9-12.

47. Yoo, C. S., Im, H. G., Wang, Y., Trouve, A., 2004, "Direct Numerical Simulation of Turbulent Nonpremixed Counterflow Ethylene-Air Flame with Soot and Radiation Models," *Tenth International Conference on Numerical Combustion*, Sedona, Arizona, May 9-12.

48. Trouve, A., Wang, Y., Im, H. G., Yoo, C. S., Rutland, C. J., Wang, Y., Chen, J. H., Sutherland, J. C., and Mason, S. D., 2004, "Direct Numerical Simulation of Turbulent Combustion using a Fully Compressible Flow Formulation," *Tenth International Conference on Numerical Combustion*, Sedona, Arizona, May 9-12.

49. Chen, J. H., Hawkes, E. R., Sankaran, R., and Im, H. G., 2004, "Turbulent Mixing Effects on Ignition Front Propagation with Temperature Inhomogeneities," *Tenth International Conference on Numerical Combustion*, Sedona, Arizona, May 9-12.

50. Vanzieleghem, B., Assanis, D. N., and Im, H. G., 2004, "Modeling of Gasoline Direct Injection Combustion Using KIVA-3V: Development of an Extended Coherent Flamelet Model and Validation with Optical Engine Planar Laser Induced Fluorescence Measurements," *COMODIA 2004, The Sixth International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines*, Yokohama, Japan, August 2-5.

51. Yoo, C. S., Wang, Y., Trouve, A., and Im, H. G., 2005, "Characteristic Boundary Conditions for Direct Simulations of Reacting Counterflow," *4th Joint Meeting of the U.S. Sections of the Combustion Institute*, The Combustion Institute, March 20-23, Drexel University, Philadelphia, PA.

52. Li, J., Sankaran, R., and Im, H. G., 2005, "Extinction Characteristics of Catalyst-Assisted Combustion in a Stagnation-Point Flow Reactor," *4th Joint Meeting of the U.S. Sections of the Combustion Institute*, The Combustion Institute, March 20-23, Drexel University, Philadelphia, PA.

53. Sankaran, R., and Im, H. G., 2005, "A Theoretical Study on the Effects of Thermal Stratification on the Operating Range of HCCI Engines," *4th Joint Meeting of the U.S. Sections of the Combustion Institute*, The Combustion Institute, March 20-23, Drexel University, Philadelphia, PA.

54. Hawkes, E. R., Sankaran, R., Chen, J. H., and Im, H. G., 2005, "DNS of the Effects of Thermal Stratification and Turbulent Mixing on Constant Volume H2/Air Ignition, and Comparison with the Multi-Zone Model," *4th Joint Meeting of the US Sections of the Combustion Institute*, The Combustion Institute, March 20-23, Drexel University, Philadelphia, PA.

55. Hawkes, E. R., Chen, J. H., Sankaran, R., and Im, H. G., 2005, "Direct Numerical Simulations of Ignition Front Propagation in a Constant Volume with Thermal Stratification,"

European Combustion Meeting 2005, Louvain-la-Neuve, April 3-6.

56. Yoo, C. S., Im, H. G., Wang, Y., and Trouve, A., 2005, "Improved Navier-Stokes Characteristic Boundary Conditions for Direct Simulations of Compressible Reacting Flows," *Third MIT Conference on Fluid and Solid Mechanics*, June 14-17, Massachusetts Institute of Technology, Cambridge, MA.

57. Kang, S. H., Baek, S. W., and Im, H. G., 2005, "Effects of Heat and Momentum Losses on the Flame Stability in a Narrow Channel," *Third MIT Conference on Fluid and Solid Mechanics*, June 14-17, Massachusetts Institute of Technology, Cambridge, MA.

58. Im, H. G., 2005, "High-Speed, High-Fidelity Simulation of Reacting Flows Towards Energy and Environmental Research," *The 2005 US-Korea Conference on Science, Technology and Entrepreneurship*, August 11-13, Irvine, California.

59. Dhingra, A. and Im, H. G., 2005, "Counterflow Heat Exchanger Model for Thermal Management of a Compact Catalytic Fuel Processor System," *2005 ASME International Mechanical Engineering Congress and Exposition*, ASME, November 5-11, Orlando, Florida.

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