Curriculum Vita

Aamir Dawood Abid

Department of Aerospace and Mechanical Engineering
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EDUCATION

Ph.D. (expected) Aerospace and Mechanical Engineering, University of Southern California, Dissertation title: *Experimental Investigation of Soot Nucleation and Growth in Premixed Flat Flames*. Advisor: Professor Hai Wang *August 2004 – present*

Master of Science, Aerospace and Mechanical Engineering, University of Southern California, *July 2004*

Bachelor of Science, Mechanical Engineering, Northwestern University, *June 1999*

EXPERIENCE

Research Assistant, Department of Aerospace and Mechanical Engineering, University of Southern California, Los Angeles, CA *2005 – present*

- Utilized a probe sampling/ SMPS to obtain detailed particle size distribution functions for soot generated from burner stabilized flat flame.
- Modified a particle classification system to investigate soot nucleation and growth.
- Developed a detailed soot particle size distribution map for premixed burner stabilized flames and investigated the effects of temperature, equivalence ratio and fuel structure on soot nucleation and growth.
- Determined particle morphology of nascent soot using atomic force microscopy (AFM) and transmission electron microscopy (TEM) via thermophoretic sampling.
- Experimentally determined the propensity of soot formation from rich premixed methane-air mixtures using conventional spark ignition and corona ignition.
- Helped to understand the ignition characteristics of methane-air mixtures introduced to palladium-based catalyst using a flow reactor.
- Helped characterized particle size distribution of flame generated inorganic nanoparticles.
- Mentored an undergraduate student in experimental techniques used in aerosol sizing and characterization.

Manufacturing/Purchasing Engineer- New product development, Briggs and Stratton Corporation, Wauwatosa, WI *1997 – 2002*

- Managed a procurement budget of $10 million per annum.
- Successfully launched an outboard internal combustion engine and met overall cost targets.
- Introduced current manufacturing technologies, reducing production costs and improved product performance.
- Successfully completed seminars in advanced negotiating and procurement strategies, internal combustion fundamentals, materials selection and piston/piston ring design.

Teaching Assistant/Grader, Department of Aerospace & Mechanical Engineering
University of Southern California, Los Angeles, CA, September 2002 – December 2004

Introduction of Aerospace Engineering, Undergraduate Thermodynamics, Energy and Fuels, Advanced Engineering Mathematics

TECHNICAL EXPERTISE

- Developed and used instrumentation to characterize particulate nucleation and growth including a scanning mobility particle sizer (SMPS), aerosol electrometer and electrostatic precipitator.
- Conducted combustion experiments using laser diagnostic methods (incoherent Raman scattering technique). Investigated flame temperature and species measurements from a methane-air counterflow flame.
- Advanced knowledge of gas analysis using gas chromatographic techniques.
- Successfully completed a one-semester course in Scanning Electron Microscopy.
- Computer skills: Programming knowledge in Fortran, C++, Visual Basic, and MatLab™; operating systems: Windows XP, Linux/Unix, OS-X(Macintosh); web page design using Frontpage. Modeling software SolidWorks, ProE, AutoCAD. SAP.

HONORS / PROFESSIONAL ACTIVITIES

- Kenzel Engineering Scholarship. (Full tuition waver. Fall 2003)
- Member of American Society of Mechanical Engineers
- Member of American Association of Aerosol Research
- Member of the Combustion Institute
- Member of SAE (Society of Automotive Engineers)

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PUBLICATIONS

Referred Journal Papers

- **A. D. Abid**, N. Heinz, E. D. Tolmachoff, D. J. Phares, C. S. Campbell, H. Wang, "*On the evolution of particle size distribution functions of soot in premixed ethylene-oxygen-argon flames*," Combust. Flame, in press, 2008.
- **A. D. Abid**, E. D. Tolmachoff, D. J. Phares, H. Wang, Y. Liu, A. Laskin "*Size distribution and morphology of nascent soot in premixed ethylene flames with and without benzene doping*," Proc. Combust. Inst., in press, 2008.
- E. D. Tolmachoff, **A. D. Abid**, D. J. Phares, C. S. Campbell, H. Wang, "*Synthesis of Nano-Phase TiO2 Crystalline Films over Premixed Stagnation Flames*," Proc. Combust. Inst. In press, 2008.
- M. Thierley, H.-H. Grotheer, M. Aigner, Z. Yang, **A. D. Abid**, B. Zhao, H. Wang, "*On existence of nanoparticles below the sooting threshold*," Proc. Combust. Inst. 31 (2007) 639-647.

Conference Papers and Abstracts

- **A. D. Abid**, H. Wang, "*Study on the Presence of Nanoparticles in Near-Sooting Premixed Ethylene-Air Flat Flames*," Spring Meeting of the Western States Section of the Combustion Institute, Los Angeles, CA, March 17-18, 2008, paper 08-S40.
- **A. D. Abid**, H. Wang, "*Detailed Soot Particle Size Distributions and Modeling Study of Ethylene/Oxygen/Argon Flames Doped with Benzene*," Fall Meeting of the Western States Section of the Combustion Institute, Livermore, CA, October 16-17, 2007, paper 07F-69.
- H. Wang**, A. D. Abid**, "*Prospect of size distribution and chemical composition measurements of nascent soot formed in premixed flames*," International Workshop on Combustion Generated Fine Particles, Anacapri, Italy, May 13-16, 2007.
- **A. D. Abid**, N. Heinz, E. D. Tolmachoff, D. J. Phares, H. Wang, "*Relation between Particle Size Distribution Function and Morphology of Soot Formed in Atmospheric-Pressure, Premixed Ethylene-Oxygen-Argon Flame*," 5th Joint States Section of the Combustion Institute Meeting, San Diego, CA, March 25-28, 2007, paper 07-F11.
- **A. D. Abid**, N. Heinz, E. D. Tolmachoff, D. J. Phares, C. S. Campbell, H. Wang, "*Evolution of Particle Size Distribution Function of Nascent Soot in Premixed Ethylene Flames*," AAAR Annual Conference, Reno NV, September 24-28, 2007.

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REFERENCES

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