



**D E S I G N
R E S E A R C H
E N G I N E E R I N G**

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WENDY C. SANDERS, Ph.D., P.E., CFEI

Professional Specialization

Fluid mechanics, combustion, thermodynamics, and heat transfer, as well as general mechanical engineering fields. Automotive and marine component design, design analysis, and manufacturing processes. Analysis of thermal/fluid processes and investigation of thermal issues. Fire and explosion investigation. Powertrain performance analysis.

Accident analysis and reconstruction for passenger vehicles and recreational boating. Failure and design analysis of motor vehicle systems, subsystems and components, including fuel and powertrain systems. System and component testing, including instrumentation, data reduction and analysis. Digitization and CAD rendering of accident scenes, vehicles, and vehicle components. Analysis of operator, occupant and pedestrian behaviors and human factors as related to accident analysis, guardings, and warnings.

Design and execution of large-scale and laboratory-scale fluid mechanics experiments, multiphase flow analysis, and turbulent flow analysis. Near-full-scale hydrodynamics experiments to investigate boundary layer theory and methods of skin friction drag reduction. Instrumentation for flow diagnostics. Numerical and analytical model development of various single-phase and multi-phase fluid flows, including CFD analysis.

Professional Background

B.S.E. (Mechanical Engineering), University of Michigan-Ann Arbor, 1997

M.S.E (Mechanical Engineering) University of Michigan- Ann Arbor, 2000

Ph.D. (Mechanical Engineering) University of Michigan- Ann Arbor, 2004

Traffic Accident Reconstruction, Northwestern University Traffic Institute, 2005

National Fire, Arson & Explosion Investigation Training, National Association of Fire Investigators, 2010

Additional Engineering Courses (Manufacturing and Materials Engineering, Systems Engineering),
Oakland University, 1997-1998

Senior Project Engineer

Design Research Engineering

2010-present

Project Engineer

Design Research Engineering

2006-2010

Engineer

Exponent, Inc.

2004-2006

Senior Engineering Consultant

WebCradle, LLC

2001-2002

Research Engineer

DaimlerChrysler – Advanced Engines Group

1999-2001

Product Engineer

DaimlerChrysler – Large Car Powertrain

1998-1999

Supplier Quality Engineer

Chrysler Corporation – Procurement & Supply

1997-1998

WENDY C. SANDERS, Ph.D., P.E.

Professional Licenses

Registered Professional Mechanical Engineer, Michigan, #6201052340
Certified Fire and Explosion Investigator (CFEI), #15389-8187

Professional Memberships

Member, Society of Automotive Engineers
Member, National Association of Fire Investigators
Member, National Fire Protection Association
Member, Human Factors and Ergonomics Society

Honors

Cum Laude, University of Michigan
Best Student Paper Presentation – Acoustical Society of America
Rackham Merit Fellowship – University of Michigan
National Defense Science and Engineering Graduate Fellowship – Honorable Mention
J.A. Bursley Award for Outstanding Student in Mechanical Engineering – University of Michigan

Publications

“Bubble Friction Drag Reduction in a High Reynolds Number Flat Plate Turbulent Boundary Layer,”
Journal of Fluid Mechanics, April 2006, Vol. 552 (with E. Winkel, D. Dowling, M. Perlin, and S. Ceccio).

“Bubble Drag Reduction at Large Scales and High Reynolds Numbers,” 25th Symposium on Naval Hydrodynamics, Labrador, Newfoundland, August 2004 (with J. Cho, E. Winkel, E. Ivy, R. Etter, D. R. Dowling, M. Perlin, and S. L. Ceccio).

"Bubble drag reduction at large scales and high Reynolds number," paper no. 2004-2393, 34th AIAA Fluid Dynamics Conference, Portland, OR, June 2004 (with J. Cho, D. R. Dowling, M. Perlin, and S. L. Ceccio).

“Bubble Friction Drag Reduction at High Reynolds Number,” American Physical Society Meeting, Seacaucus, NJ, Nov. 2003 (with E. Ivy, E. Winkel, J. Cho, S.L. Ceccio, D. R. Dowling, and M. Perlin).

“Microbubble Drag Reduction At High Reynolds Number,” 4th ASME/JSME Joint Fluids Engineering Conference, Honolulu, Hawaii, July 2003 (with E. M. Ivy, S. L. Ceccio, D. R. Dowling, and M. Perlin).

“Flat-Plate Turbulent Boundary Layer Measurements at High Reynolds Number,” American Physical Society Meeting, Dallas, Texas, November 2002 (with C. Judge, E. Ivy, E. Winkel, S. L. Ceccio, D. R. Dowling, and M. Perlin).

“Turbulent Boundary Layer Pressure Fluctuations at Large Scales And High Reynolds Number,” Acoustical Society of America Conference, Pittsburgh, Pennsylvania, June 2002 (with C. Judge, E. Winkel, S. L. Ceccio, D. R. Dowling, and M. Perlin).

“The University of Michigan Hiplate Experiment,” 3rd Symposium on the Smart Control of Turbulence, Tokyo, Japan, March 2002 (with D. R. Dowling, M. Perlin, and S. L. Ceccio).

“Applicability of Electrical Impedance Tomography to the Study of Gasoline Direct Injection Sprays and Combustion,” 2nd World Congress on Industrial Process Tomography, Hanover, Germany, August 2001 (with S. L. Ceccio, and V. Sick).

Doctoral Dissertation

“Bubble Drag Reduction in a Flat Plate Boundary Layer at High Reynolds Numbers and Large Scales,”
The University of Michigan, Ann Arbor, MI, January 2004.