

Iskander S. Akhatov, Ph.D.

CURRICULUM VITAE

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Education

- 1990: **Doctor of Physical and Mathematical Sciences** (The highest scientific degree in Russia) in Mechanics of Fluids and Gases. Thesis: *Instability and Waves in Dynamics of Fluids with Relaxation*, defended at the Research Council of the Lavrentiev Institute of Hydrodynamics, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia.
- 1980-1983: Lomonosov Moscow State University, School of Mechanics and Mathematics, Department of Gas and Wave Dynamics. Graduate course. **Ph.D.** in Mechanics of Fluids and Gases. Thesis: *Mathematical Modeling of Combustion and Detonation in Dispersed Explosives and Powders*, defended at the Research Council of the Institute for Problems in Mechanics, Russian Academy of Sciences, Moscow, Russia.
- 1974-1979: Lomonosov Moscow State University, School of Physics. **B.S./M.S.** in Physics, Department of Mathematics (with honors). Thesis: *Structure of Detonation Waves in Mixtures of Gases with Fuel Particles*

Professional Experience

- 2008-Present: Professor (Tenured), Department of Mechanical Engineering & Applied Mechanics, North Dakota State University, Fargo, ND
- 2008-June: Visiting Professor of University of Provence, Marseille, France
- 2007-Present: Associate Professor (Tenured), Department of Mechanical Engineering & Applied Mechanics, North Dakota State University, Fargo, ND
- 2005-Present: Faculty Associate, Center for Nanoscale Science & Engineering, North Dakota State University, Fargo, ND
- 2003-2007: Associate Professor (Tenure-track appointment), Department of Mechanical Engineering & Applied Mechanics, North Dakota State University, Fargo, ND
- 2001-2003: Visiting Researcher, Department of Mechanical, Aerospace & Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY (with Prof. R.T. Lahey, Jr.)
- 2000-2003: Director, Institute of Mechanics, Ufa Branch of the Russian Academy of Sciences, Ufa, Russia
- 1999: Visiting Professor, Department of Aerospace and Mechanical Engineering, Boston University, Boston, MA (with Prof. R.G. Holt)
- 1993-2000: Visiting Researcher, The Third Physical Institute, University of Göttingen, Göttingen, Germany (with Prof. W. Lauterborn)
- 1993-2000: Vice-President, Ufa Branch of the Russian Academy of Sciences, Ufa, Russia
- 1992-2000: Head of the Laboratory of Multiphase Fluid Dynamics, Institute of Mechanics, Ufa Branch of the Russian Academy of Sciences, Ufa, Russia
- 1991-2001: Professor and Chair, Department of Mechanics, Bashkir State University, Ufa, Russia

- 1985-1990: Associate Professor, Department of Applied Mathematics and Mechanics, Bashkir State University, Ufa, Russia
- 1983-1985: Assistant Professor, Department of Theoretical Mechanics and Hydromechanics, Bashkir State University, Ufa, Russia

Research Interests

- Micro- and nanometer-scale flows of liquids, gases, and multiphase systems; nanotechnology
- Transport phenomena in porous media, composite materials and fuel cells
- Dynamics of bubbles and bubbly liquids
- Fluid dynamics, heat and mass transfer phenomena in multiphase systems and non-Newtonian fluids

Teaching Activity

- ME 351: Thermodynamics I (3 credits, Undergraduate Level)
- ME 352: Fluid Dynamics (3 credits, Undergraduate Level)
- ME 482/682: Fuel Cell Science and Engineering (3 credits, Undergraduate/Graduate Level. Section "Heat and Mass Transfer in Fuel Cells" for Graduate Students)
- ME 480/680: Advanced Fluid Dynamics (3 credits, Undergraduate/Graduate Level)
- ME 755: Multiscale Fluid Dynamics (3 credits, Graduate Level)

Honors and Awards

- Lenin scholarship (1978-1979) as a student of School of Physics, Lomonosov Moscow State University
- Ph.D. thesis was awarded the Prize of Komsomol for best research work of a young scientist (1984), Ufa, Russia
- Member of the National Committee for Theoretical and Applied Mechanics of Russia (2001)
- Honored person in Science and Technology of Republic Bashkortostan, Russia (2001)
- Corresponding Member of Academy of Sciences of Republic Bashkortostan, Russia (since 2002)
- NDSU College of Engineering and Architecture, Researcher of the Year Award (2005/2006)

Professional Service

- Member of the Scientific Committee of the Third International Conference on Multiphase Flow (Lyon, France, 1998)
- Member of the Organizing Committee of the International Conference on Multiphase Systems. (Ufa, Russia 2000)
- Member of the Organizing Committee of the Fourth International Conference on Multiphase Flow (New Orleans, LA 2001)
- Member of the Acoustical Society of America
- Member of the American Society of Mechanical Engineers
- Member of the American Physical Society, Fluid Dynamics Division
- Reviewer for Physics of Fluids, Journal of Acoustical Society of America, European Journal of Mechanics-B/Fluids, Deep-Sea Research Part II: Topical Studies in Oceanography (Special volume on small and meso-scale processes, Elsevier), Microfluidics & Nanofluidics, International Journal of Heat and Mass Transfer, Optics & Laser Technology, Proceedings of the Royal Society, Acustica (Nonlinear Acoustics), Journal of American Society of Artificial Internal Organs (ASAIO).

University Service

- Member, Graduate Committee of Department of Mechanical Engineering, NDSU
- Member, Graduate Committee of College of Engineering and Architecture, NDSU
- Member, Scholarship Committee of the Department of ME, NDSU
- Member, Strategic Planning Committee of the Department of ME, NDSU

Selected Conferences

- Japan (1995) - 2nd Int. Conference on Multiphase Flow, Kyoto
- USA (1997) - NATO ASI on Sonochemistry and Sonoluminescence, Seattle
- France (1998) - 3rd Int. Conference on Multiphase Flow, Lyon
- USA (1998) - 16th Int. Congress on Acoustics and 135th Meeting of ASA, Seattle
- USA (1999) - 138th Meeting of ASA, Columbus
- USA (2001) - 4th Int. Conference on Multiphase Flow, New Orleans
- USA (2001) - 4th Int. Symposium on Cavitation, Pasadena
- Italy (2004) - 3rd International Symposium for Two-Phase Modeling and Experimentation, Pisa
- USA (2005) - NSTI Nanotechnology Conference and Trade Show, Anaheim, CA.
- USA (2006) - US National Congress on Theoretical and Applied Mechanics, Boulder, CO.
- USA (2006) - NSTI Nanotechnology Conference and Trade Show, Boston, MA.
- USA (2006) – Annual Meeting of the APS Division of Fluid Dynamics, Tampa Bay, FL.
- USA (2007) – Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, Utah.
- Canada (2008) - ECI International Conference on Heat Transfer and Fluid Flow in Microscale, Whistler, BC

Invited Lectures

- Technical University of Darmstadt (Germany), Institute for Applied Physics (1992)
- University of Bayreuth (Germany), School for Mathematics and Physics (1992)
- University of Göttingen (Germany), the Third Physical Institute (1998, 1999, 2000)
- University of Potsdam (Germany), Center for Dynamics of Complex Systems (1996)
- Technical University of Munich (Germany), Institute for Thermodynamics B (1993, 1994, 1995)
- Boston University, Department of Aerospace and Mechanical Engineering (1999)
- Dynaflow, Inc. (MD, USA) (1999)
- Institute Meurice (Belgium), Laboratory of Sonochemistry (2000)
- Universite' Libre de Bruxelles (Belgium), Department of Applied Sciences (2000)
- UC Santa Barbara, Center for Risk Studies and Safety, Department of Chemical Engineering (2001)
- Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace and Nuclear Engineering, "Michael A. Sadowsky Lecture in Applied Mechanics" (2002)
- University of Lausanne (Switzerland), Institute of Theoretical Physics (2003)
- Institute of Henri Poincare, Paris (2007)

Collaborators

- Dr. R.T. Lahey, Jr. - Rensselaer Polytechnic Institute, Dept. of Mechanical Aerospace and Nuclear Engineering, Troy, NY
- Dr. R.G. Holt - Boston University, Dept. of Aerospace and Mechanical Engineering, Boston, MA
- Dr. W. Lauterborn - University of Göttingen, The Third Physical Institute, Göttingen, Germany
- Dr. B. Z. Jang - College of Engineering and Computer Science, Wright State University, Dayton, OH
- Dr. S. Gavriluk – University of Marseille, France
- Dr. D. Mascaro – Department of Mechanical Engineering, University of Utah, Salt Lake City, Utah
- Dr. D.L. Schulz – Center for Nanoscale Science and Engineering, NDSU, Fargo, ND