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CURRICULUM VITAE

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citizenship: USA
Fellow of the Johns Hopkins University
Fellow of the American Physical Society
*Professor Emeritus and Adjunct Professor of Mechanical Engineering, Pennsylvania State University
*Guest Professor of Computer-based Biopharmaceutical Mechanics, Department of Pharmacy, Uppsala University, Sweden

EDUCATION AND DEGREES

1974-1979	STANFORD UNIVERSITY, Department of Aeronautics and Astronautics
	Ph.D., Aeronautical and Astronautical Science, September 1979. Minor: Physics
	M.S. Aeronautical and Astronautical Engineering, April 1976.
1969-1973	UNIVERSITY OF MARYLAND, Department of Aerospace Engineering
	B.S., Aerospace Engineering, May 1973.

FACULTY POSITIONS

July 2019 -June 2022	UPPSALA UNIVERSITY, SWEDEN, DEPARTMENT OF PHARMACY Guest Professor of Computational Biopharmaceutical Mechanics
1 Sept. 2015 - present	THE UNIVERSITY OF COLORADO BOULDER Research Professor of Aerospace Engineering Sciences Affiliate Faculty, Atmospheric and Oceanic Sciences
1 Sept. 2015 - present	THE PENNSYLVANIA STATE UNIVERSITY Professor Emeritus and Adjunct Professor of Mechanical Engineering
2006 - 2015	THE PENNSYLVANIA STATE UNIVERSITY Professor of Mechanical Engineering, Biomedical Engineering, and Mathematics
1996-2006	THE PENNSYLVANIA STATE UNIVERSITY Professor of Mechanical Engineering and Bioengineering
1992-1996	THE PENNSYLVANIA STATE UNIVERSITY Associate Professor of Mechanical Engineering and Bioengineering
1988 -1992	THE PENNSYLVANIA STATE UNIVERSITY Assistant Professor of Mechanical Engineering and Bioengineering
1985 -1988	CLEMSON UNIVERSITY Assistant Professor of Mechanical Engineering

OTHER PROFESSIONAL EXPERIENCE

June 2022 June 2021	CENTRALE LILLE, France Visiting Professor
June 2022 June 2021	LABORATOIRE DE MECANIQUE DES FLUIDES DE LILLE (LMFL), France Faculty for the Lille Turbulence Programs 2021, 2022
Jan. 2018 - present	NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR) Affiliate Scientist, Research Applications Laboratory (RAL)
Sept - Oct 2016	UNIVERSITY OF ROME, “TOR VERGATA” Visiting Scientist, Department of Physics
May 2016 - present	ATMOSPHERIC AND OCEANIC SCIENCES (ATOC), University of Colorado Affiliate Professor

June 2014	NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR) Visiting Scientist, Research Applications Laboratory (RAL)
July/Aug 2013	NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR) Visiting Scientist, Research Applications Laboratory (RAL)
May - Aug 2012	NATIONAL RENEWABLE ENERGY LABORATORY (NREL) 3.5 month sabbatical, National Wind Technology Center (NWTC)
Aug 2011- April 2012	NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR), 8 months sabbatical, ASP Faculty Fellow (Advanced Studies Program), Atmospheric Chemistry Division (ACD), (with support from IMAGe, MMM, and RAL divisions of NCAR)
June - July 2010	NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR), Visiting Scientist, Institute for Mathematics Applied to Geosciences (IMAGe).
June-Aug 2007	IMPERIAL COLLEGE LONDON, Institute for Mathematical Sciences, Visiting Professor
March 2005	IMPERIAL COLLEGE LONDON, Department of Aeronautics, Visiting Professor.
Oct-Nov 2004	UNIVERSITY OF KYOTO, Kyoto, Japan, Department of Mechanical Engineering, Visiting Professor.
May - June 2000	UNIVERSITY OF CALIFORNIA SANTA BARBARA, Institute for Theoretical Physics, Invited Scientific Participant, Research Program on the Physics of Hydrodynamic Turbulence
Jan - July 1999	CAMBRIDGE UNIVERSITY, Isaac Newton Institute for Mathematical Sciences, Invited Scientific Participant, Research Programme on Turbulence.
April/May 1995	CAMBRIDGE UNIVERSITY, Cambridge, England Visiting Professor (sabbatical), Department of Applied Mathematics and Theoretical Physics (DAMTP)
Feb./April 1995	ECOLE CENTRALE DE LYON, Lyon, France Visiting Professor (sabbatical), Centre d'Acoustique.
Aug.1, '94 - Jan.30,'95	LOS ALAMOS NATIONAL LABORATORY, Los Alamos, New Mexico Visiting Scientist (sabbatical), Center for Nonlinear Studies/Theoretical Division
June-July 1992	ECOLE CENTRALE DE LYON, Lyon, France Visiting Professor, Centre d'Acoustique.
	Turbulence-generated Noise: collaborative research with Professors Comte-Bellot, Juvé, Blanc-Benon and students into sources of turbulence generated noise and acoustic propagation through turbulence.
summers '87 '88, Dec.'87	NASA-AMES RESEARCH CENTER & STANFORD UNIVERSITY The Center for Turbulence Research (CTR)
	Turbulence: Invited participant in the 1987 and 1988 Summer Programs of the Center of Turbulence Research at NASA-Ames Research Center, Stanford University. Additional research in December 1987.
1983-1985	THE JOHNS HOPKINS UNIVERSITY Department of Chemical Engineering (Postdoctoral Fellow with Stanley Corrsin)
	Turbulence/nonlinear Dynamics: Direct computations of the spectral Navier-Stokes equations to analyze interscale energy transfer among Fourier modes.
	Bio-fluid Dynamics (with the Johns Hopkins School of Medicine): Theoretical analysis of peristaltic transport and applications to esophageal bolus transport.
1980-1982	UNIVERSITY OF SOUTHAMPTON, England Department of Aeronautics and Astronautics (Postdoctoral Fellow with Geoffrey Lilley)
	Aerodynamics in Ground Effect: Experimental and theoretical studies of ground effect on the lift on bodies moving close to the ground—application to magnetic levitation vehicles.
1979-1980	NASA AMES RESEARCH CENTER N.R.C. Research Associate, Experimental Fluid Dynamics branch
	Turbulent Boundary Layers/Computational Fluid Dynamics: modification and development of turbulence models for computation of 2D transonic flows with separation.
1974-1979	STANFORD UNIVERSITY Department of Aeronautics and Astronautics (Research Assistant, M.S. & Ph.D.)
	Vortex Dynamics (Ph.D. thesis): "Kinematics and Dynamics of Vortex Rings in a Tube." (combination of kinematic theory with experimental measurement to quantify the evolution characteristics of vortex rings over a wide range of Reynolds numbers.)
	Bio-fluid Dynamics: flow visualization study of pulsatile effects of arterial stenosis.

Bio-fluid Dynamics (with the Stanford Medical School): hydrodynamic study of the flow of radioactively tagged microspheres through the circulatory system as a technique for measuring blood flow rates.

Gas Dynamics (M.S. research; Prof. Daniel Bershader, advisor): "An Experimental Study of Line and Continuum Emission Through the Non-Equilibrium Region of Shock Heated Argon."

1978-1981 STANFORD UNIVERSITY
Institute for Plasma Research (Research Assistant/Consultant for Prof. John Wilcox)

Solar-Terrestrial Physics: analysis of the response of geostrophic vorticity to the passage of solar magnetic sector boundaries.

SPONSORED ACTIVITIES

Fluid Turbulence and Turbulent Flow Related

Title:	Wind Field Turbulence Impacts on time-varying Wind Turbine Drivetrain Loads
Sponsor:	National Renewable Energy Laboratory.
P.I.:	James Brasseur (University of Colorado)
Period:	November 2019 - May 2020
Award:	$34,753
Title:	Interscale Turbulence-Chemistry Dynamics with Reduced Basis Representations
Sponsor:	Air Force Office of Scientific Research (AFOSR), AFOSR Award No. FA9550-16-1-0388.
P.I.s:	James Brasseur (University of Colorado) and Yuan Xuan (Pennsylvania State University)
Period:	15 Sept 2016 - 14 March 2020 (extended to 31 December 2020)
Award:	$194,175 subcontract; $640,741 total
Title:	A HPC "Cyber Wind Facility" Incorporating Fully-Coupled CFD/CSD for Turbine-Platform-Wake Interactions with the Atmosphere and Ocean
Sponsor:	Department of Energy
P.I.:	James Brasseur
Co-P.I.s:	Eric Paterson, Sven Schmitz, Robert Campbell, Sue Haupt (NCAR)
Industry Partner:	GE Global Research
Period:	30 September 2011 – 31 August 2015 (3 years + no-cost extension
Award:	$1,200,000 (DOE) + $283,756 (Penn State/ARL) + internal industry support
Title:	Application of the Penn State High Performance Computing "Cyber Wind Facility" to Design Atmosphere-Informed Controls of Wind Turbines within Wind Plants to Lower Levelized Cost of Energy
Sponsor:	Pennsylvania State College of Engineering Innovation Grant
P.I.:	James Brasseur
Co-P.I.:	Sven Schmitz
Period:	1 August 2014 - 31 July 2015 (1 year)
Award:	$50,000
Title:	Space-time Loadings on Wind Turbine Blades driven by Atmospheric Boundary Layer Turbulence: Coupling LES and DES
Sponsor:	National Science Foundation (NSF), CBET-0933647
P.I.:	James Brasseur
Co-P.I.:	Eric Paterson, Applied Research Laboratory
Period:	15 August 2009 - 31 July 2013 (3 years)
Award:	$335,466 + $76,738 (ARL/Penn State)
Title:	Wind Energy Workforce Development: Engineering, Science, & Technology Meeting the Needs of the Future, Now
P.I.:	George Lesieutre, department of Aerospace Engineering, Penn State
co-investigators:	5 faculty (including James Brasseur) + 1 ARL employee
Sponsor:	DOE "20% Wind by 2030: Overcoming the Challenges": Workforce Development
Period:	1 October 2009 - 30 September 2011 (2 years)
Award:	$398,456 total
Title:	High-accuracy Near-Surface Large-Eddy Simulation with planar and Non-Planar Topography
Sponsor:	Army Research Office (ARO), W911NF-04-1-0205
P.I.:	James Brasseur
Co-P.I.:	John Wyngaard
Period:	1 July 2004 - 28 September 2009 (4 years + 1 year no-cost extension)
Award:	$472,785
Title:	Development of a Validated Large-Scale Modeling Capability for Polymer Drag Reduction
Sponsor:	DARPA, JK00000554SC

P.I.: James Brasseur (subcontract in a larger effort with several groups)
Period: 10 October 2003 - 31 December 2005 (2 years, 5 months)
Award: $190,153

Title: Drag Reduction in Turbulent Flows: Prediction of Drag Reduction with Polymer Additives
Sponsor: DARPA, MD972-01-C-0032
Co-P.I.s: James Brasseur, Lance Collins
Period: 24 April 2001 – 10 October 2003 (2 years, 6 months)
Award: $431,000

Title: Resolvable- and Subgrid-Scale Measurements in the Atmospheric Surface Layer
Sponsor: National Science Foundation, ATM-9704740
P.I.: John Wyngaard
Co-P.Is.: James Brasseur, Dennis Thomson
Period: November 1, 1997 - October 31, 2001 (3 years + 1 year no-cost extension)
Award: $398,488

Title: Improved Subgrid-scale Modeling in the Atmospheric Surface Layer
Sponsor: Army Research Office (ARO), DAAG55-97-1-0296
P.I.: John Wyngaard
Co-P.I.: James Brasseur
Period: July 1, 1997 - June 30, 2001 (3 years + 1 year no-cost extension)
Award: $306,000

Title: Acoustic Propagation through Synthesized and Simulated Atmospheric Turbulence
Sponsor: National Science Foundation, International Programs, #INT-9512914
P.I.: James Brasseur
Period: April 1, 1996 - March 30, 1999 (3 years)
Award: $20,060 (for international collaboration)

Title: Measurement, Analysis and Prediction of Atmospheric Boundary Layer Turbulence
Sponsor: University Research Initiative (URI) Army Research Office #DAAL03-92-G-0117
P.I.: John Wyngaard, Department of Meteorology, Penn State
Co-P.I.'s: James Brasseur, Dennis Thompson (Meteorology)
Period: June 15, 1992 - June 14, 1998 (5 years + 1 year no-cost extension)
Award: $1,850,000

Title: Application of New Concepts in Scientific Analysis to Atmospheric Studies
Sponsor: Army Research Office (ASSERT), P-32059-GS-AAS
P.I.: James Brasseur
Period: August 15, 1993 - August 14, 1997 (3 years + 1 year no-cost extension)
Award: $100,000

Title: Physical-space View of Time Dependent Scale Interactions at High Reynolds Numbers
Sponsor: Office of Naval Research (AASERT), N00014-93-1-0661
P.I.: James Brasseur
Period: June 1, 1993 - May 31, 1996 (3 years)
Award: $102,874

Title: Simulation and Analysis of Time Dependent Scale Interactions at High Reynolds Numbers
Sponsor: Office of Naval Research, N00014-92-J-1417
P.I.: James Brasseur
Period: January 1, 1992 - Dec. 31, 1994 (3 years)
Award: $169,245

Title: Turbulence Structure Associated with Intercomponent Energy Transfer and Interscale Energy Transfer, and Modification by Forcing
Sponsor: AFOSR, AFOSR-89-0026
P.I.: James Brasseur
Period: Nov. 1, 1988 - Oct. 31, 1992 (3 years)
Award: $264,516

Title: The Structure of High Reynolds Number Turbulent Boundary Layers
Sponsor: University Research Initiative (URI), AFOSR-90-0113
P.I.: James Brasseur
Co-P.I.'s: A.J. Smits, Princeton University
K.R. Sreenivasan, Yale University

Period:	Dec. 1, 1989 - 1992 (3 years)
Award:	$311,367 (Penn State portion)

Gastro-intestinal Physiology-Mechanics and Drug Delivery Related

Title:	In vivo Predictive Dissolution (Subcontract title: Computational Fluid Dynamics Simulation of Drug Release, Transport and Absorption)
P.I.	Gordon Amidon, University of Michigan
co-P.I's:	James G. Brasseur (University of Colorado), Gregory Amidon (Univ Michigan), Luca Marciani (Univ. Nottingham, UK)
Sponsor:	FDA Contract No. HHSF223201510157C
Period:	1 September 2017 – 31 March 2018
Award:	$50,000 Brasseur subcontract first year

Title:	Modernization of in vivo-in vitro Oral Bioperformance Prediction and Assessment
P.I.'s	Gordon Amidon, Duxin Sun, University of Michigan
co-P.I's:	James G. Brasseur (Penn State), Gregory Amidon (Univ Michigan)
Sponsor:	FDA Contract No. HHSF223201310144C (Subcontract No. 3003692899)
Period:	26 Aug 2013 – 25 November 2017
Award:	$748,866 Brasseur subcontract ($4,395,597 total)

Title:	Physiologically-Based Dissolution Apparatus
Sponsor:	Subcontract to University of Michigan on a grant with AstraZeneca Pharmaceuticals, Sweden
P.I.:	James Brasseur
Collaborators:	Greg Amidon, Gordon Amidon, Dept of Pharmacology, University of Michigan
Period:	1 January 2011 - 31 December 2011 (1 year)
Award:	$50,000

Title:	I*n Vitro* And *In Silico* Characterization and Modeling of the Effects of Hydrodynamics on the Dissolution of Low Soluble Drug Particles in The Small Intestine.
Sponsor:	AstraZeneca Pharmaceuticals, Sweden
Collaborators:	Bertil Abrahamsson, Lennart Lindfors, AstraZeneca Sweden
P.I.:	James Brasseur
Period:	1 September 2007 - 31 December 2011 (4 years, 3 months)
Award:	$354,000

Title:	Micro-scale Transport as a Critical Link Between Molecular-Scale Absorption and Macro-Scale Mixing in Gut Physiology and Function
P.I.:	James G. Brasseur
Sponsor:	National Science Foundation, CTS-0506215 (part of the Micro-Scale Modeling Consortium of NSF, NIH, and NASA (under IMAG)
Co-PI:	Andrew Webb, Nadine Smith (Bioeng, Penn State), Jack Wood (Physiology, Ohio State)
Period:	1 September 2005 – 31 August 2010 (5 years)
Award:	$720,000

Title:	The Esophagogastric Junction in Health and Disease
P.I.:	James G. Brasseur on a subcontract to NIH grant with Dr. Peter Kahrilas as PI
Sponsor:	National Institutes of Health (NIH), R01 DK56033
Collaborators:	Peter J, Kahrilas, M.D. (gastroenterology), Raymond J. Joehl, M.D. (surgery)
Period:	1 April 2001 – 31 March 2006 (5 years)
Award:	Penn State: $386,399

Title:	Evaluation of Shear Stress and Drug Release from Tablets in the Stomach
Sponsor:	AstraZeneca Pharmaceuticals
P.I.:	James Brasseur
Period:	1 January 2002 –31 May 2006 (4 years, 4 months)
Award:	$188,000

Title:	Mechano-Physiological Approach to Normal Anorectal Function and the Classification of Defecatory Disorders
P.I.:	Ann Ouyang
co-PI	James G. Brasseur (no salary support)
Sponsors:	Dean's Feasibility Grant, College of Medicine, Penn State University
Period:	1 July 2004 - 30 June 2006 (2 years)
Award:	$30,000 total

Title:	Mechano-Physiological Approach to Normal Anorectal Function and the Classification of Defecatory Disorders
P.I.:	Ann Ouyang

co-PI	James G. Brasseur (no salary support)
Sponsors:	American College of Gastroenterology
Period:	1 July 2004 - 30 June 2005 (1 year)
Award:	$35,000 total
Title:	Mechano-Physiological Approach to Normal Anorectal Function and the Classification of Defecatory Disorders
P.I.:	James G. Brasseur (no salary support)
Sponsors:	Penn State Hucks Life Sciences Institute
Period:	15 August 2004 - 14 August 2005 (1 year)
Award:	$14,830 total
Title:	Analysis of Concurrent Ultrasound and Pressure Data to Evaluate the EndoCinch Procedure
P.I.:	James G. Brasseur
Sponsor:	Bard Endoscopic Technologies
Collaborators:	Larry Miller, M.D., Temple University Medical School
Period:	15 Aug 2002 - 14 Aug 2004 (2 years)
Award:	$99,676
Title:	Evaluation of Shear Stress and Drug Release from Tablets in the Stomach
Sponsor:	AstraZeneca Pharmaceuticals
P.I.:	James Brasseur
Period:	January 1, 2001 –October 31, 2001 (11 months)
Award:	$52,000
Title:	Drug Distribution and Emptying in the Stomach
Sponsor:	University Hospital, Zürich Switzerland
P.I.:	James Brasseur
Collaborators:	W. Schwizer, M.D., University Hospital, Zürich, Switzerland
Period:	December 1, 1999 - November 31, 2000 (1 year)
Award:	$50,000
Title:	Clinical - Research Swallowing Motility Diagnostic System
Sponsor:	National Institutes of Health (NIH), STTR Phase II, R42 DK52058
P.I.:	James Brasseur
Collaborators:	Kay Elemetrics Corporation, Lincoln Park, NJ
Period:	February 1, 1998 – November 31, 2000 (2 years, 9 months)
Award:	$500,000
Title:	Mathematical Modeling and Analysis of Gastric Mixing , Emptying and Control
Sponsor:	Janssen Research Foundation
P.I.:	James Brasseur
Collaborators:	W. Schwizer, M.D., University Hospital, Zürich, Switzerland; J. Dent, M.D., Royal Adelaide Hospital, Adelaide, Australia
Period:	March 31, 1999 - March 31, 2000 (1 year)
Award:	$56,570
Title:	Upper Esophageal Sphincter Opening and Transsphincteric Flow
P.I.:	James G. Brasseur on a subcontract to NIH grant to with Dr. Reza Shaker as PI
Sponsor:	National Institutes of Health (NIH), #R01 DC000669
Period:	April 1, 1995 - March 31, 1999
Award:	Penn State: $60,000 (4 years)
Title:	Mathematical Modeling and Analysis of Gastric Mixing , Emptying and Control
Sponsor:	Janssen Research Foundation
P.I.:	James Brasseur
Collaborators:	W. Schwizer, M.D., University Hospital, Zürich, Switzerland; J. Dent, M.D., Royal Adelaide Hospital, Adelaide, Australia
Period:	August 15, 1996 - January 14, 1999 (2 years, 5 months)
Award:	$92,763
Title:	Clinical - Research Swallowing Motility Diagnostic System
Sponsor:	National Institutes of Health (NIH), STTR Phase I, R42 DK52058
P.I.:	James Brasseur
Collaborators:	Kay Elemetrics Corporation, Lincoln Park, NJ
Period:	Sept. 30, 1996 - Dec 1, 1997 (1 year)
Award:	$100,000

Title: Mechanical Study and Modeling of the Esophageal Function
Sponsor: National Institutes of Health (NIH), R01-DK41436
P.I.: James Brasseur
Collaborators: W.J. Dodds, Medical College of Wisconsin; P. Kahrilas, Northwestern Medical School; B. Jones, M.D./W. Ravich, M.D., The Johns Hopkins Medical Institutions
Period: July 1, 1992 - June 30, 1996 (4 years + 1 year no-cost extension)
Award: $541,698

Title: Upper Esophageal Sphincter Opening and Transsphincteric Flow
P.I.: James G. Brasseur on a subcontract to NIH grant to with Dr. Wylie J. Dodds as PI
Sponsor: National Institutes of Health (NIH), R01 DC000669
Period: August 1, 1989 - July 31, 1994 (5 years)
Award: Penn State: $228,227

Title: Fluid Mechanics of Esophageal Bolus Transport
Sponsor: National Institutes of Health (NIH), R01 DK41436
P.I.: James Brasseur
Period: August 1, 1988 - July 31, 1991 (3 years)
Award: $287,139
Collaborator: Wylie J. Dodds, M.D. Medical College of Wisconsin

Computer Equipment Grants

Title: Human-Simulation-Data Interactions and Applications from Biotechnology to Oil Exploration
Sponsor: IBM Shared University Research (SUR) Program
P.I.: James Brasseur
Date: September 1997
Award: $167,835

Title: Development of a Postprocessing and 3D Graphical Imaging Facility
Sponsor: Defense Research Instrumentation Program (DURIP)
P.I.: James Brasseur
Date: December 1, 1988
Award: $216,373

Teaching Grants

Title: Workshop on the Enhancement of Student Learning in Mechanical Engineering through Course Coordination and Pedagogical Technique
Sponsor: College of Engineering, Pennsylvania State University
P.I.: James G. Brasseur
Co-PI: Richard C. Benson
Date: March 1997-98
Award: $5,000

TEACHING EXPERIENCE

Fluid Flow (junior level and honors). Texts: White, 3rd/4th/5th Ed; Fox & McDonald, 3rd Ed.; Shames, 2nd Ed.

Thermodynamics I, II. (sophomore, junior levels). Texts: VanWylen & Sonntag, 3rd Ed; Moran & Shapiro, 2nd Ed.

Heat Transfer (senior level and honors). Text: Incropera & DeWitt, 4th Ed.

Numerical Methods (sophomore level). Text: James, Smith, & Wolford, 3rd Ed.

Undergraduate Research: advised nine undergraduate students carrying out senior and honors research projects.

Fluid Dynamics I (graduate). Primary references: Panton, *Incompressible Flow*; Kundu, *Fluid Mechanics*.

Fluid Dynamics II (graduate). Primary references: Panton, *Incompressible Flow*; Kundu, *Fluid Mechanics*; Tennekes and Lumley, *A First Course in Turbulence*; Pope, *Turbulent Flows*.

Heat Conduction (graduate). Primary Reference: Poulikakos, *Conduction Heat Transfer*.

Turbulence and Applications to CFD: DNS and LES (graduate). Primary references: Pope, Mathieu and Scott, Batchelor, Lesieur, course notes and papers. 3 computer projects; satisfies Computational Science Graduate Minor.

Homogeneous Turbulence (graduate). Primary reference: course notes and texts/papers in library.

Wavelet Transforms and Applications in Mechanical Engineering (graduate). Primary Reference: course notes.

Basic Principles of Large Eddy Simulation (graduate seminar course in Mechanical Engineering and Meteorology, taught with J.C. Wyngaard). Primary reference: course notes.

Transition to and Development of Turbulence (graduate special topics course, team taught). Primary Reference: course notes and library reverences.

PUBLICATIONS: JOURNALS, BOOK CHAPTERS AND PROCEEDINGS (140 total)

Hart, E., Stock, A., Elderfield, G., Elliott, E., Brasseur, J., Keller, J., Guo, Y., Song, W. 2022 Impacts of wind field characteristics and non-steady deterministic wind events on time-varying main-bearing loads. Wind Energ. Sci., 7, 1209–1226.

Jayaraman, B., Brasseur, J.G. 2021 Transition in Atmospheric Boundary Layer Turbulence Structure From Neutral to Convective and Large-scale Rolls. *J. Fluid Mech.* 913, A42, doi:10.1017/jfm.2021.3.

Paes, P.L.K., Brasseur, J.G., Xuan, Y., Shah, Y.G. 2021 Fourier-Physical Space Coherent Structure in Flame-Vortex Interactions Relevant to Flame-turbulence Interactions using a New Signal Periodization Procedure. *AIP Advances* **11**, 045006, https://doi.org/10.1063/5.0050280.

Shah, Y.G., Brasseur, J.G., Xuan, Y. 2021 On the Structure of Local Subfilter-scale Species Surrounding Flame Fronts in LES of Premixed Turbulent Combustion. Physics of Fluids 33(4): 045122 (2021); https://doi.org/10.1063/5.004587.

Shah, Y.G., Brasseur, J.G., Xuan, Y. 2020 Assessment of disparities in estimating filtered chemical reaction rates in LES using DNS of turbulent premixed combustion. *Combustion Theory and Modelling* **24**(6): 1179-1194. https://doi.org/10.1080/13647830.2020.1831616.

Heissam, K., Abrehart, N., Hoad, C.L., Wright, J., Menys, A., Murray, K., Blover, P.M., Hebbard, G., Gowland, P.A., Baker, J., Hassler, W.L., Spiller, R.C., Corsetti, M., Brasseur, J.G., Hens, B., Shedden, K., Dickens, J., Mudie, D.M., Amidon, G.E., Amison, G.L., Barciani, L. 2020 Measurement of fasted state gastric motility before and after a standard bioavailability and bioequivalence 240 mL drink of water: validation of spatio-temporal mapping MRI imaging method against concomitant perfused manometry in healthy participants. PLoS ONE 15(11): e0241441 https://doi.org/10.1371/journal.pone.0241441.

Paes, P.L.K., Shah, Y.G., Brasseur, J.G., Xuan, Y. 2020 A Scaling Analysis for the Evolution of Small-Scale Turbulence Eddies across Premixed Flames with Implications on Distributed Combustion. *Combustion Theory and Modelling*, 24 (2): 307–325, https://doi.org/10.1080/13647830.2019.1679396.

Vijayakumar, G., Brasseur, J.G. 2019 Blade-resolved modeling with fluid–structure interaction. Ch. 2 in: Veers, P. (Ed.), *Wind Energy Modeling and Simulation - Volume 1: Atmosphere and Plant.* Institute of Engineering and Technology (IET), DOI: 10.1049/PBPO125F_ch2.

Wang, Y., Brasseur, J.G. 2019 Enhancement of Mass Transfer from Particles by Local Shear-Rate and Correlations with Application to Drug Dissolution. AIChE J., e16617, https://doi.org/10.1002/aic.16617.

Baker, J.R., Dickens, J.R., Koenigsknecht, M., Frances, A., Lee, A.A., Shedden, K.A., Brasseur, J.G., Amidon, G.L., Sun, D., Hasler, W.L. 2019 Propagation Characteristics of Fasting Duodeno-Jejunal Contractions in Healthy Controls Measured by Clustered Closely-spaced Manometric Sensors. *J. Neurogastroenterol. Motil*. **25** (1): 100-112., https://doi.org/10.5056/jnm18112.

Paes, P.L.K., Shah, Y.G., Xuan, Y., Brasseur, J.G. 2019 Dynamically Dominant Interscale Couplings in the Nonlinear Chemical Source Terms for Species Evolution in Premixed Turbulent Combustion with Application to LES Modeling. Proc. 11th U.S. National Combustion Meeting, Pasadena, California, March 24-27, 2019.

Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2019 A Novel Strategy to Identify Dynamically Dominant Inter-Scale Couplings for Application to Large-Eddy Simulation of Premixed Turbulent Combustion. AIAA Paper No. 2019-1644, January 2019 SciTech Meeting, San Diego.

Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2019 Kinematic Relationships between Physical and Fourier Space in Premixed Turbulent Combustion for Application to Large-Eddy Simulation. AIAA Paper No. 2019-2145, January 2019 SciTech Meeting, San Diego.

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Ren, J., Dodds, W.J., Martin, C.J., Dantas, R.O., Mittal, R., Kern, M.K., Brasseur, J.G. 1991 Effect of increased intraabdominal pressure on peristalsis in the feline esophagus. *Amer. J. Physiol.* **261** (*Gastroint. and Liver Physiol*. **24**): G417-G425.

Massey, B.T., Dodds, W.J., Hogan, W.J., Brasseur, J.G., Helm, J.F. 1991 Abnormal esophageal motility: an analysis of concurrent radiographic and manometric findings. *Gastroenterology* **101**: 344-354.

Brasseur, J.G. 1991 Comments on the Kolmogorov hypotheses of isotropy in the small scales. AIAA Paper No. 91-0230 (Reno, Nevada, January 91).

Brasseur, J.G., Lin, W.-Q. 1991 Structure and statistics of intermittency in homogeneous turbulent shear flow. *Advances in Turbulence 3*, Springer-Verlag, Heidelberg: 3-12.

Dantas, R.O., Cook, I.J., Dodds, W.J., Kern, M.K., Lang, I.M., Brasseur, J.G. 1990 Biomechanics of cricopharyngeal bars. *Gastroenterology* **99**: 1269-1274.

Brasseur, J.G., Jameson, K.J. 1990 The effect of a ground plane on the lift and circulation of airfoils in potential flow. *Proc. CSME Mechanical Engineering Forum 1990, Vol 1. Fluid Mechanics*: 13-18.

Jameson, K.J., Brasseur, J.G. 1990 The viscous effects of a ground plane on the lift and circulation of two-dimensional bodies at small gap spacing. *Proc. CSME Mechanical Engineering Forum 1990, Vol. 1. Fluid Mechanics*: 19-24.

Dantas, R.O., Kern, M.K., Massey, B.T., Dodds, W.J., Kahrilas, M.D., Brasseur, J.G., Cook, I.J, Lang, I.M. 1990 Effect of swallowed bolus variables on the oral and pharyngeal phases of swallowing. *Amer. J. Physiol*. **258** (*Gastrointest. Liver Physiol*. **21**): G675-G681.

Cook, I.J., Dodds, W.J., Dantas, R.O., Massey, B., Kern, M.K., Lang, I.M., Brasseur, J.G., Hogan, W.J. 1989 Opening mechanism of the upper esophageal sphincter. *Amer. J. Physiol*. **257** (*Gastrointest. Liver Physiol*. **20**): G748-G759.

Brasseur, J.G., Lee, M.J. 1989 Pressure-strain-rate events in homogeneous turbulent shear flow. In: H.-H. Fernholz & H.E. Fiedler (Eds.), *Advances in Turbulence 2*, Springer-Verlag, Heidelberg: 306-312.

Brasseur, J.G., Lee, M.J. 1988 Pressure-strain-rate events in homogeneous turbulent shear flow. In Proceedings of the 1988 Summer Program, *Center for Turbulence Research Report CTR-588*, NASA-Ames Research Center and Stanford University: 143-156.

Brasseur, J.G., Lee, M.J. 1987 The local structure of intercomponent energy transfer in homogeneous turbulent shear flow. In Proceedings of the 1987 Summer Program, *Center for Turbulence Research Report CTR-S87*, NASA-Ames Research Center and Stanford University: 165-178.

Brasseur, J.G. 1987 A fluid mechanical analysis of esophageal transport. In Foster, K.R. (ed.): *Proc. Thirteenth Northeast Bioeng. Conf., Vol. 2*, IEEE, New York: 371-374.

Brasseur, J.G. 1987 A fluid mechanical perspective on esophageal bolus transport. *Dysphagia* **2**: 32-39.

Brasseur, J.G., Corrsin, S. 1987 The spectral evolution of the Navier-Stokes equation for low order couplings of Fourier modes. In Comte-Bellot, G., Mathieu, J. (eds.): *Advances in Turbulence*, Springer-Verlag, Heidelberg: 152-162.

Brasseur, J.G., Corrsin, S., Lu, N.Q. 1987 The influence of a peripheral layer of different viscosity on peristaltic pumping with Newtonian fluids. *J. Fluid Mech.* **174**: 495-519.

Brasseur, J.G. 1986 Evolution characteristics of vortex rings over a wide range of Reynolds numbers. AIAA Paper No. 86-1097.

Brasseur, J.G., Chang, I-D. 1981 Combination of kinematics with flow visualization to compute total circulation. *AIAA Journal* **19**: 878-884.

Brasseur, J.G. 1979 *Kinematics and dynamics of vortex rings in a tube*. Ph.D. Thesis, Joint Institute for Aeronautics and Acoustics, Report JIAA TR-26, Dept. of Aeronautics and Astronautics, Stanford University.

Brasseur, J.G., Chang, I.-D. 1979 Flow Visualization of the Post-stenotic Flowfield in pulsatile Flow. *Proc. 1979 Biomech. Symposium*, AMD, Vol. 32, ASME, New York: 157-160.

EXTENSIONS TO THE GENERAL PUBLIC

2013 Interviewed by APS TV on the APS Topical Group in the Physics of Climate. See http://www.aps.org/meetings/march/services/apstv.cfm and http://www.youtube.com/watch?v=GjEANbwFTnA&feature=youtu.be.

2009 *Gut Check: A Team of Mechanical Engineers May be Close to Understanding a Key Body Function*. Feature article in: Engineering Magazine, Penn State University, Spring/Summer 2009.

2008 Story on our modeling of the small intestine entitled "*Gut Reaction: Digestion Revealed in 3-D*" was developed by the National Science Foundation and appeared in the "discoveries" section of the NSF website (http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=112393&org=NSF). It has also appeared on LiveScience.com (http://www.livescience.com/health/081003-bts-3d-digestion.html) and the NSF facebook website (http://www.facebook.com/pages/Arlington-VA/National-Science-Foundation-NSF/30037047899), and has been picked up elsewhere such as news.yahoo.com, medgadget.com, YubaNet.com, topix.com, microscopekids.com, etc.

2007 Press Conference, Madrid Spain, 7 May 2007: Press Conference, Madrid, Spain, "Discovery of a Magenstrasse in the Human Stomach, and Implications to Drug Delivery." Organized and funded by AstraZeneca Spain.

2006 Press Release, "Road wends its way through the stomach." Many newspaper and other articles all over the world.

2004: "Virtual Stomach Promises Better Pills," In: *Medical Breakthroughs 2004*", Readers Digest, p. 162, 2004.

2003: Television spot created under the series "Discoveries & Breakthroughs Inside Science" developed by the American Institute of Physics distributed to television stations around the USA.

2002 Newspaper article in *The Post-Standard* in Syracuse, N.Y, Technology" Section, 13 November 2002.

2002 Article appeared in *Pharmaceutical Technology North America*, November Issue.

2002 Newspaper article in *Clarin Newspaper*, Argentina, November.

2002: Newspaper article entitled "The Virtual Stomach (No, It's Not a Diet Aid)" appeared in the *New York Times, "Circuits"* section, 31 October 2002. (http://www.nytimes.com/2002/10/31/technology/what-s-next-the-virtual-stomach-no-it-s-not-a-diet-aid.html)

2002 Newspaper article appeared in *Süddeutsche Zeitung*, Munich Germany, 29 October.

2002 Article appeared on Whitaker Foundation website news.

2002 Article appeared on The Why Files, http://whyfiles.org.

GRADUATE THESES SUPERVISED

Shah, Yash Girish 2021 *Dominant Interscale Dynamics in Premixed Turbulent Combustion for Application to Large-Eddy Simulation* (co-advisor with Prof. Yuan Xuan, Dept. Mechanical Engineering), Ph.D Thesis, Pennsylvania State University, University Park, PA.

Paes, Paulo, 2019 *Analysis of Inter-Scale Turbulence-Chemistry Dynamics with Reduced Physics Simulations for Application to Large-Eddy Simulation of Premixed Turbulent Combustion.* (co-advisor with Prof. Yuan Xuan, Dept. Mechanical Engineering), Ph.D Thesis, Pennsylvania State University, University Park, PA, May 2019.

Lavely, Adam, 2017 *Effects of Daytime Atmospheric Boundary Layer Turbulence on The Generation of Nonsteady Wind Turbine Loadings and Predictive Accuracy of Lower Order Models*, PhD Thesis, Pennsylvania State University. August 2017.

Nandi, Tarak. 2017 *Effects of Blade Boundary Layer Transition with Daytime Atmospheric Turbulence on Wind Turbine Performance Analyzed with Blade-Resolved Simulation and Field Data*. PhD Thesis, Pennsylvania State University, May 2017.

Paes, Paulo, 2015 *Improved Predictions of the Atmospheric Boundary Layer with Large-eddy Simulation*. (co-advisor with Professor Marcelo Chamecki, Dept. of Meteorology), M.S. Thesis, August 2015.

Vijayakumar, Ganesh. 2015 *Non-steady Dynamics of Atmospheric Turbulence Interaction with Wind Turbine Loadings through Blade Boundary Layer Resolved HPC*. PhD Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, May 2015.

Banco, Gino G. 2010 *Multi-Scale Fluid Mechanics of Nutrient Absorption in the Small Intestine with 2D and 3D Lattice-Boltzmann Models.* Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, December 2010.

Ailiani, Amit. 2010 *Quantitative Analysis of In Vivo Peristaltic and Segmental Motion in the Rat Small Intestine Using Dynamic MRI*. Ph.D. Thesis, Department of Bioengineering, Pennsylvania State University, University Park, PA. May 2010, co-advisor with Professor Andrew Webb, May 2010.

Robert, Ashish. 2008 *Fundamental Physics Underlying Polymer Drag Reduction from DNS of Homogeneous Shear and Isotropic Turbulence with the FENE-P Model*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, August 2008.

Ghosh, Sudip. 2005 *Modeling, Mechanics and Physiology of the Esophagus and Lower Sphincter*, Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, May 2005.

Schiffner, Bryan J. 2004 *Opening Stiffness of the Esophago-gastric Segment in Health, with GERD, and after Endoscopic Surgery*. M.S. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Pal, Anupam 2000 *Motility of the Pharynx Analyzed Using Lattice Boltzmann Simulation*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Carrano, Charles S. 1997 *General Decompositions and Spectral Dynamics Applied to Burgers' Model of Turbulence*. PhD Thesis, Department of Aerospace Engineering, Pennsylvania State University, University Park, PA.

Nicosia, Mark A. 1997 *Muscle Mechanics and Modeling of the Esophagus During Swallowing.* Ph.D. Thesis, Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA.

Cotter, John J. 1997 *Scalar Entrainment through the Capping Inversion of the Atmospheric Boundary Layer.* M.S. Thesis, Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA.

Khanna, Samir 1995 *Structure of the Atmospheric Boundary Layer from Large-Eddy Simulation*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Witkowska, Alicja 1995 *Estimation Numérique du Bruit Rayonné par une Turbulence Isotrope*. (Numerical Simulation of Noise Radiation from Isotropic Turbulence.) Doctoral Thesis, Centre d'Acoustique, Ecole Centrale de Lyon, France. (co-advisor with Professor Daniel Juvé).

Hsieh, Pei-Ying 1995 *Mechanical Function of the Upper Esophageal Sphincter during Opening and Transsphincteric Flow*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Wang, Qunzhen 1994 *Relationship between Scale and Structure in Turbulence Analyzed using Three-dimensional Wavelet Transforms*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Lin, Wen-Quei 1993 *Structural and Dynamical Characteristics of Intermittent Structures in Homogeneous Turbulent Shear Flow*. Ph.D. Thesis, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA.

Dusey, Mukund P. 1993 *Numerical Analysis of Lubrication Theory and Peristaltic Transport in the Esophagus*. Ph.D. Thesis, Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA.

Wei, Chao-Hsuan 1991 *Interscale Couplings and Spectral Dynamics in High Reynolds Number Turbulence in Terms of Triadic Interactions*. M.S. Thesis, Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA.

Jameson, Kerry J. 1989 *Effect of the Ground on the Circulation and Lift on a Body Moving at Constant Speed*. M.S. Thesis, Department of Mechanical Engineering, Clemson University, Clemson, SC.

Lu, Nancy Q. 1986 *The Influence of Two Newtonian Fluids with Different Viscosity on Peristaltic Pumping*. M.S. Thesis, Department of Chemical Engineering, The Johns Hopkins University, Baltimore, MD (Co-advisor with Professor Stanley Corrsin).

UNDERGRADUATE THESES SUPERVISED

Chisena, Robert, Nov. 2014. *Evaluation of the Effective Shear Modulus Method with Residual Stresses in the No-Load Stress State and Comparison to the Standard Method*. Shreyers Honors College Undergraduate Thesis. Co-advisor: Francesco Costanzo, Engineering Science and Mechanics.

Averbach, Michael, May 2011 *An Automated Data Analysis and Quantification System for Concurrent High Resolution Manometry and Impedance (ADAQuS)*. Undergraduate Thesis, Department of Mechanical Engineering, The Pennsylvania State University.

Shaparenko, Barukyah May 2009 *An Automated Impedance-Manometry System for Clinical Evaluation of Esophageal Dysmotiility*. Shreyers Honors College Undergraduate Thesis, Department of Mechanical Engineering, The Pennsylvania State University.

Kasrel, Jaclyn 2007 *The Physiological and Functional Advantage of Longitudinal Esophageal Muscle*. Shreyers Honors College Undergraduate Thesis, Department of Mechanical and Bio Engineering, The Pennsylvania State University.

Heit, Lauren 2004 *Longitudinal Shortening During Swallowing in the Esophago-Gastric Segment*, Undergraduate Thesis, Department of Bioengineering, The Pennsylvania State University.

Ulerich, Rhys 2003, *Anatomical and Physiological Structure of the Esophago-Gastric Segment*. Shreyers Honors College Undergraduate Thesis, Department of Mechanical Engineering, The Pennsylvania State University.

Guilinger, Scott 2003 *Subtle Muscle Behavior in the Esophagus during Swallowing.* Shreyers Honors College Undergraduate Thesis, Department of Mechanical Engineering, The Pennsylvania State University.

Carruba, Frank 1996 *Geometry-Pressure Relationships in Esophageal Bolus Transport.* Undergraduate Thesis, Department of Mechanical Engineering, Pennsylvania State University.

Kit, Sharon M. 1987 *Analysis of Esophageal Peristalsis with a Simplified Mathematical Model*., Undergraduate Honors Thesis, Department of Mechanical Engineering, Clemson University.

POSTDOCTORAL RESEARCH ASSOCIATES SUPERVISED

Behafarid, Farhad , September 2015 - 2018. Area of Research: Development and Application of a Lattice-Boltzmann Model of drug particle Transport and Dissolution *in vitro* and *in vivo*.

Vijayakumar, Ganesh, September 2015 - June 2016. Area of Research: Development and Application of a Lattice-Boltzmann Model of drug particle Transport and Dissolution *in vitro* and *in vivo*.

Vijayakumar, Ganesh, June 2015 - August 2015. Area of Research: HPC of Wind Turbines for Reliability.

Mehdizadeh, Amirfarhang , July 2013 –July 2015: German Research Foundation (DFG) Fellowship to work with Professor Brasseur within the Cyber Wind Facility program.

Jayaraman, Balaji, January 2012 - August 2015. Areas of research: (1) Atmospheric Dynamics in the Development of a "Cyber Wind Facility." (2) Development and Application of a Lattice-Boltzmann Model of drug particle Transport and Dissolution *in vitro* and *in vivo*.

Wang, Yanxing, 2006 - 2011. Areas of research: Lattice-Boltzmann modeling of macro-micro mixing in the small intestine; Drug dissolution; numerical methods.

Wei, Tei, 2004 - Sept 2009. Areas of research: High accuracy large-eddy simulation strategies and modeling for near-surface predictions; application to simulations of the atmospheric boundary layer with varying topography.

Pal, Anupam 2001-2006. Areas of research: simulation of gastric mechanics using the lattice-Boltzmann algorithm, transport, erosion and drug release from extended-release tablets within the stomach, pharyngo-UES physiology and pathophysiology.

Zhou, Yong, 1999-2001: Areas of research: Development of a new sub-filter-scale model for near-surface large-eddy simulation; application of the new SFS closure to large-eddy simulation of the atmospheric boundary layer.

Yu, Huidan. 1999-2000. Areas of research: Development of a new moving boundary condition for lattice-Boltzmann simulations; development and application of the lattice-Boltzmann method for simulation of gastric mechanics.

Indireshkumar, K. 1997-1999. Areas of research: Analysis of the physiology of gastric emptying; development of the lattice-Boltzmann method and simulation of gastric mixing and emptying.

Juneja, Anurag, 1996 – 1999. Areas of research: Subgrid physics for large-eddy simulation close to a surface; development of a new sub-filter-scale model for near-surface large-eddy simulation.

Wang, Lian-Ping, 1993 – 1996. Areas of research: Fundamental turbulence physics analyzed using direct numerical simulation; simulations of the atmospheric boundary layer using large-eddy simulation.

Li, Meijing, 1990 – 1998. Areas of Research: Physiological analysis, mathematical modeling, and simulation esophageal characteristics during bolus transport; mathematical analysis of a singularity in lubrication theory; developer of the Motility Analysis System for esophageal manometry and videofluoroscopy data, in collaboration with Kay Elemetrics Corp.

Yeung, P.K. 1989-1992. Area of research: Scale Interactions in Fully Turbulent Flows Analyzed Theoretically and with direct numerical simulation.

MEETING ABSTRACTS

Brasseur, J.G., Paes, P.L.K., Xuan, Y. 2020 Dynamically-dominant Subfilter-scale content for application to LES of Turbulence-Flame Interactions in Premixed Turbulent Combustion. (abstract) 73rd Annual Meeting of the APS Division of Fluid Dynamics, http://meetings.aps.org/Meeting/DFD20/Session/P03.10.

Whitman, S., Brasseur, J., Hamlington, P. 2020 Thermal Effects in the Turbulent Wake of a Heated Bluff Body. (abstract) 73rd Annual Meeting of the APS Division of Fluid Dynamics, http://meetings.aps.org/Meeting/DFD20/Session/S09.8.

Brasseur, J.G., Shah, Y., Paes, P.L.K., Xuan, Y. 2019 Fundamental Differences between Large-Eddy Simulation of Incompressible Turbulence vs. Premixed Turbulent Combustion, (abstract) Bull. Amer. Phys. Soc. 64 (13): https://meetings.aps.org/Meeting/DFD19/Session/NP05.160.

Brasseur, J.G., Paes, P.L.K., Xuan, Y. 2018 Dominant Subfilter-Resolved Scale Flame-Turbulence Advective Nonlinearities in LES of Premixed Turbulent Combustion. (abstract) Bull. Amer. Phys. Soc. 63 (13): http://meetings.aps.org/link/BAPS.2018.DFD.A02.8.

Shah, G., Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2018 Concurrent relationships between Physical and Fourier Space representation of three dimensional flow structures for LES of premixed turbulent combustion. (abstract) Bull. Amer. Phys. Soc. 63 (13): http://meetings.aps.org/link/BAPS.2018.DFD.A02.7.

Xuan, Y., Brasseur, J.G. 2018 Inter-scale turbulence-chemistry couplings in premixed turbulent combustion for large-eddy simulations. (abstract) Bull. Amer. Phys. Soc. 63 (13): http://meetings.aps.org/link/BAPS.2018.DFD.L25.1.

Brasseur, J.G., Behafarid, F., Wang, Y., Mudie, D., Amidon, G. 2017 Hydrodynamic Influences on Drug Dissolution and Absorption In Vitro and In Vivo, quantified with Mathematical Models and Computer Simulation. 6th Pharmaceutical Sciences World Congress (FIP PSWC 2017), Poster and abstract.

Brasseur, J.G., Paes, P.L.K, Chamecki, M. 2017 The Role of Law-of-the-Wall and Roughness Scale in the Surface Stress Model for LES of the Rough-wall Boundary Layer. (abstract) Bull. Amer. Phys. Soc. 62 (14): http://meetings.aps.org/link/BAPS.2017.DFD.L28.5.

Behafarid, F., Brasseur, J.G. 2017 Hydrodynamic Impacts on Dissolution, Transport and Absorption from Thousands of Drug Particles Moving within the Intestines. (abstract) Bull. Amer. Phys. Soc. 62 (14): http://meetings.aps.org/link/BAPS.2017.DFD.D37.6.

Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2017 Relationships between Physical and Fourier Space for Large-Eddy Simulation of Premixed Turbulent Combustion: Multi-Dimensional Fourier Decomposition. (abstract) Bull. Amer. Phys. Soc. 62 (14): http://meetings.aps.org/link/BAPS.2017.DFD.F2.1.

Xuan, Y., Paes, P.L.K., Brasseur, J.G. 2017 Relationships between Physical and Fourier Space for Large-Eddy Simulation of Premixed Turbulence Combustion: Transition from Weak to Strong Vortices. (abstract) Bull. Amer. Phys. Soc. 62 (14): http://meetings.aps.org/link/BAPS.2017.DFD.F2.2.

Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2017 Global and Local Response of Premixed Flames during Flame-Vortex Interactions under Distinct Configurations. 10th U. S. National Combustion Meeting, April 23-26, 2017, College Park, MD.

Brasseur, J.G., Lavely, A., Nandi, T. 2016 Fundamental Distinctions in Physics underlying Nonsteady Forcings of Wind Turbine Power vs. Drivetrain by Atmospheric Turbulence. (abstract) Bull. Amer. Phys. Soc.: http://meetings.aps.org/Meeting/DFD16/Session/G2.1.

Paes, P.L.K., Brasseur, J.G., Xuan, Y. 2016 Representation of the Essential Flame-Turbulence Dynamics using Specific Flame-Vortex Interactions. (abstract) Bull. Amer. Phys. Soc. 61 (20): http://meetings.aps.org/Meeting/DFD16/Session/G17.6.

Behafarid, F., Brasseur, J.G., Vijayakumar, G., Jayaraman, B., Wang, Y. 2016 Computational Studies of Drug Release, Transport and Absorption in the Human Intestines. (abstract) Bull. Amer. Phys. Soc. 61 (20): http://meetings.aps.org/Meeting/DFD16/Session/A20.4.

Jayaraman, B. Brasseur, J.G., Haupt, S., Lee, J. 2016 Deviations from Equilibrium in Daytime Atmospheric Boundary Layer Turbulence arising from Nonstationary Mesoscale Forcing. (abstract) Bull. Amer. Phys. Soc. 61 (20): http://meetings.aps.org/Meeting/DFD16/Session/M13.3

Behafarid, F., Vijayakumar, G., Brasseur, J.G. 2016 The Interplay between Pharmaceutical Dissolution and Absorption In the Human Gut studied with Computer Simulation (abstract). American Association of Pharmaceutical Scientists (AAPS) Annual Meeting, Denver CO, 12-17 November, 2017. https://annual.aapsmeeting.org/event/member/309316.

Brasseur, J.G., Jayaraman, B., Haupt, S., Lee, J. 2015 Nonequilibrium Response of the Daytime Atmospheric Boundary Layer to Mesoscale Forcing (abstract) Bull. Amer. Phys. Soc. 60 (21): http://meetings.aps.org/link/BAPS.2015.DFD.E21.1.

Paes, P.L.R., Xuan, Y, Brasseur, J.G. 2015 Numerical investigation of kinetic energy dynamics during autoignition of n-heptane/air mixture. (abstract) Bull. Amer. Phys. Soc. 60 (21): http://meetings.aps.org/link/BAPS.2015.DFD.G40.6.

Vijayakumar, G., Lavely, A., Jayaraman, B., Craven, B., Brasseur, J.G. 2015 Dominant mechanism of load fluctuations on a wind turbine in a realistic atmosphere through Hybrid URANS-LES (abstract) Bull. Amer. Phys. Soc. 60 (21): http://meetings.aps.org/link/BAPS.2015.DFD.D28.4.

Jayaraman, Balaji, Brasseur, J.G., Wang, Y. 2015 Influence of Non-homogeneous Particle Distributions on Drug Release in a Couette Dissolution Device (abstract) Bull. Amer. Phys. Soc. 60 (21): http://meetings.aps.org/link/ BAPS.2015.DFD.A40.2.

Aguasvivas, S., Lavely, A., Vijayakumar, G., Brasseur, J.G., Schmitz, S., Duque, E. 2015 Nonsteady Wind Turbine Loading Response to Passage of Daytime Turbulence Eddies. Gallery of Fluid Motion, 68th Annual Meeting of the Division of Fluid Dynamics.

Mudie, D., Brasseur, J., Mansfield, J., Wang, Y., Jayaraman, B., Amidon, G. Influence of Fluid Shear Rate on Dissolution Rate of Poorly Soluble Drug Particles; Implications for *In vivo* Predictive *In vitro* Dissolution Methodologies and Mechanistic Computational Modeling. 2015 AAPS Annual Meeting and Exposition, Orlando, FL.

Jayaraman, B., Brasseur, J.G., Analysis of the Relationship Between Mesoscale-driven Atmospheric Boundary Layer Turbulence and Temporal Variations in Local Flow Angles Relevant to Wind Turbine Function Using LES. (abstract) Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Vijayakumar, G., Lavely, A., Jayaraman, B., Craven, B.A.,, Brasseur, J.G. Interaction of Atmospheric Turbulence with Blade Boundary Layer Dynamics on a 5MW Wind Turbine using Blade-boundary-layer-resolved CFD with hybrid URANS-LES (abstract) Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Lavely, A., Vijayakumar, G., Brasseur, J.G. (abstract) Comparisons of Lower-order Wind Turbine Models with Blade-Boundary-Layer Resolved CFD for Unsteady Wind Turbine Loading Response to Atmospheric Turbulence. Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Mehdizadeh, A., Brasseur, J.G. Integration of Trigger and Grid to Improve the Transition from URANS to LES in Hybrid URANS-LES. (abstract) Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Nandi, T., Brasseur, J.G., Vijayakumar, G. Analysis of Nonsteady Transitional Boundary Layer Dynamics for Flow over an Oscillating S809 Airfoil using the γ-Re_θ Transition Model. (abstract) Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Paes, P.L.K., Brasseur, J.G., Chamecki, M. The Role of Law-of-the-Wall in the Lower Stress Boundary Condition for Large-Eddy Simulation over Rough Surfaces. (abstract) Proceedings of the Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Pennsylvania State University, June 2015.

Brasseur, J., Vijayakumar, G., Lavely, A., Jayaraman, B., Paterson, E., Sullivan, P. 2014 Two Key Discoveries on Atmospheric Turbulent Wind Forcing of Nonsteady Wind Turbine Loadings, from HPC. (abstract) Bull. Amer. Phys. Soc. 59 (20). http://meetings.aps.org/link/BAPS.2014.DFD.L30.3..

Jayaraman, B., Brasseur, J., McCandless, T., Haupt, S. 2014 Nonequilibrium Behavior of the Daytime Atmospheric Boundary Layer, from LES. (abstract) Bull. Amer. Phys. Soc. 59 (20), http://meetings.aps.org/link/BAPS.2014.DFD.L25.11.

Chisena, R., Costanzo, F., Brasseur, J., Gregersen, H., Zhao, J. 2014 Determining an Effective Shear Modulus in Tubular Organs for Fluid-Structure Interaction. (abstract) Bull. Amer. Phys. Soc. 59 (20), http://meetings.aps.org/link/BAPS.2014.DFD.H7.9.

Brasseur, J.G., Wang, Y. 2013 Hydrodynamic Enhancements of Dissolution from Drug Particles: *In vivo* vs. *In vitro*. (abstract) Bull. Amer. Phys. Soc. 58 (18): http://meetings.aps.org/link/BAPS.2013.DFD.D16.3.

Vijayakumar, G., Lavely, A., Jayaraman, B., Craven, B., Brasseur, J.G. 2013 Forcing of Wind Turbine Blade Boundary Layer Dynamics by Atmospheric Turbulence with Hybrid URANS-LES. (abstract) Bull. Amer. Phys. Soc. 58 (18): http://meetings.aps.org/link/BAPS.2013.DFD.E5.1.

Nandi, T., Jayaraman, B., Lavely, A., Vijayakumar, G., Paterson, E., Brasseur, J.G. 2013 Numerical Study of the Interaction between Nonsteady Transition and Separation on Oscillating Airfoils. (abstract) Bull. Amer. Phys. Soc. 58 (18): http://meetings.aps.org/link/BAPS.2013.DFD.E5.5.

Lavely, A., Vijayakumar, G., Craven, B., Jayaraman, B., Nandi, T., Paterson, E., Brasseur, J.G. 2013 HPC of Loading Transients on a 5-MW Wind Turbine Rotor by Atmospheric Turbulence Eddies. (abstract) Bull. Amer. Phys. Soc. 58 (18): http://meetings.aps.org/link/BAPS.2013.DFD.E5.2.

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INVITED ADDRESSES

June 2021	Lille Turbulence Programme at the Laboratoire de Mecanique des Fluides de Lille, France (in person): "Interscale Turbulence-Chemistry Dynamics with Reduced Basis Representations for Application to LES Modeling"
June 2021	Lille Turbulence Programme at the Laboratoire de Mecanique des Fluides de Lille, France (in person): "Nonequilibrium Responses of Daytime Atmospheric Boundary Layer Turbulence to Nonstationary Forcing at the Mesoscale"
April 2021	Laboratoire de Mecanique des Fluides de Lille, France (virtual): "The Dramatic Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral towards Convective, and the Development of Large-scale Rolls"
March 2020	Aerospace Engineering Sciences, University of Colorado: "Interscale Turbulence-Chemistry Dynamics with Reduced Basis Representations for Application to LES Modeling"
Feb 2020	Drivetrain Reliability Collaborative (DRC) Meeting, NREL, Golden, CO: "Impacts of Atmospheric Turbulence on Nonsteady Main Bearing Load Response"
Jan. 2020	Atmospheric and Oceanic Sciences Department Seminar Series, University of Colorado: "The Surprising Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral Stability to the Development of Large-scale Rolls."
June 2019	Joint Meeting of the Swedish Drug Delivery Forum (SDDF) and NextBioForm, Uppsala University, Sweden, "Hydrodynamic and Buffer Influences on Drug Dissolution and Absorption In Vivo: Mathematical Modeling and Computer Simulation."
Feb. 2019	Department of Mechanical Engineering Seminar Series, University of Colorado, Colorado Springs: "Mathematical Modeling and Computer Simulation of Drug Release, Transport and Absorption in the Intestines."
Sept. 2018	Keynote Speaker, iTi Conference on Turbulence, Turbulent aspects in meteorology and wind-energy, "Wind Turbine Response to Atmospheric Turbulence across Scales: Simulation and Experiment."
Aug. 2018	Uppsala University Department of Pharmacy Seminar, "Release, Transport and Absorption of Drug in the Intestines and Stomach"
May 2018	Kavli Institute for Theoretical Physics, Program on Planetary Boundary Layers in Atmospheres, Oceans, and Ice on Earth and Moons, University of California Santa Barbara: "Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral to Moderately Convective Stability States."
May 2018	Kavli Institute for Theoretical Physics, Program on Planetary Boundary Layers in Atmospheres, Oceans, and Ice on Earth and Moons, University of California Santa Barbara: "Nonequilibrium Response of the Daytime Atmospheric Boundary Layer to Forcing at the Mesoscale"
March 2018	Invited Faculty, Oral Drug Delivery (ODD) 2018, Lake Tahoe, CA: "Fluid Motions in the Gastro-Intestinal Tract, Fasted/Fed Computational Fluid Dynamics: (CFD) Results and Insights."

March 2018 Invited Faculty, Oral Drug Delivery (ODD) 2018, Lake Tahoe, CA: "Micro-Macro Fluid Motions: 2D & 3D from CFD Results."

Feb. 2018 Eli Lilly Pharmaceutics Invited Seminar, "Impacts of In Vivo vs. In Vitro Fluid Hydrodynamics on Dissolution and Absorption in the Human Intestines."

Dec 2017 NREL National Wind Technology Center, "Nonsteady Responses on the Wind Turbine Drivetrain from Rotor Aerodynamic Forcings by Coherent Turbulence Eddies"

Sept 2017 AAPS Workshop on In Vivo Predictive Drug Dissolution/Simulation, Rockville, MD: "Impacts of In Vivo Fluid Hydrodynamics on Dissolution and Absorption in the Human Intestines"

Sept 2017 Simcyp, Sheffield, England, "Hydrodynamic Influences on Drug Dissolution and Absorption In vivo and In Vitro, quantified by Integrating Mathematical Models with Computational Fluid Dynamics"

May 2017 FDA Public Input for FY 2016 Generic Drug Research Part 15 Public Hearing, "Stochastic Frameworks for Variability in Oral Dissolution-Absorption and Predictability"

Feb 2017 Bend Research (a division of Capsugel), Bend OR, "Computational model experiments of fundamental aspects of the interplay among drug release, transport, mixing, and absorption with in vivo peristaltic motility"

Nov 2016 Pennsylvania State University, Fluid Dynamics Research Consortium Seminar Series, "Nonsteady Forcing of Wind Turbine Drivetrains by the Passage of Daytime Atmospheric Turbulence Eddies, analyzed with Field and Computational Data"

Sept 2016 University of Rome, "Tor Vergata," Dept. of Physics, "Multiscale Transport, Mixing, Absorption and Drug Dissolution in the Intestine."

Sept 2016 Invited Presentation, Sept 2016: University of Rome, "Tor Vergata," Dept. of Physics, "Transformation from Isotropic to Shear-dominated Turbulence in 3-D Physical and Spectral Space."

Sept 2016 University of Rome, "La Sapienza," College of Engineering, and University of Rome, "Tor Vergata," Dept. of Physics, "Designing Large-Eddy Simulation of Rough-wall Turbulent Boundary Layers to Predict Law-of-the-Wall: the SFS and Wall Stress Models, the Grid and the Numerical Algorithm."

Aug 2016 Boulder Fluid and Thermal Sciences Seminar Series, University of Colorado, "Nonsteady Forcing of the Wind Turbine Drivetrain by the Passage of Daytime Atmospheric Turbulence Eddies Analyzed by Combining Field and Computational Data."

Aug 2016 University of Michigan Department of Surgery, "Modeling and Analysis of Gastric Motility"

July 2016 NREL National Wind Technology Center, "Nonsteady Forcing of the Wind Turbine Drivetrain by the Passage of Daytime Atmospheric Turbulence Eddies Analyzed by Combining Field and Computational Data."

June 2016 AstraZeneca Pharmaceuticals, Mölndal, Sweden, "Hydrodynamic Influences on Dissolution in the Gut: Analyses using Mathematical Models and Computer Simulation"

June 2016 EUROMECH Colloquium 576: Wind Farms In Complex Terrains, KTH Royal Institute Of Technology, Stockholm, Sweden, "Nonsteady Forcing of the Wind Turbine Drivetrain by the Passage of Daytime Atmospheric Turbulence Eddies."

May 2016 FDA Public Input for FY 2016 Generic Drug Research Part 15 Public Hearing, "Importance and Modeling of Hydrodynamic Effects in Dissolution and Absorption In Vivo vs. *In vitro*."

May 2016 WINDFARMS 2016, University of Texas at Dallas, invited Plenary Presentation, "Nonsteady Forcing of the Wind Turbine Drivetrain by the Passage of Daytime Atmospheric Turbulence Eddies."

Dec 2015 NREL National Wind Technology Center, "Two Oddities related to transitions in Atmospheric Turbulence Structure from External Forcing at the Mesoscale"

Nov 2015 University of Colorado Department of Physics Colloquium, "Polymer Drag Reduction."

Oct 2015 University of Illinois Mechanical Science & Engineering Seminar Series, "Multiscale Transport, Mixing, Absorption, and Drug Dissolution in the Intestine: The Importance of Fluid Shear."

Oct. 2015 The 8th MACCCR Annual Fuel and Combustion Research Review, Sandia/CRF, Livermore, CA, "The Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS) and Issues in the Spectral Representation of Scale Interaction in Combusting Turbulence."

Oct 2015 Boulder Fluid and Thermal Sciences Seminar Series, "Two Oddities related to the Transition in Atmospheric Turbulence Structure from External Forcing."

Sept 2015 Imperial College London, Department of Aeronautics, "Designing Large-Eddy Simulation of Rough-wall Turbulent Boundary Layers to Predict Law-of-the-Wall: the SFS and Wall Stress Models, the Grid and the Numerical Algorithm"

Sept 2015 GE Global Research, Münich, Germany, “Applications of the Penn State Cyber Wind Facility with GEGR Collaboration.”

Sept 2015 Ecole Centrale de Lyon, France, “Designing Large-Eddy Simulation of Rough-wall Turbulent Boundary Layers to Predict Law-of-the-Wall: the SFS and Wall Stress Models, the Grid and the Numerical Algorithm”

Sept 2015 World Congress of the OESO (World Organization for Specialized Diseases of the Esophagus), “Mechano-physiology: Integrations of Mechanical Principles, Neuro-physiology of Muscle Response, and Modeling in the Analysis of Esophageal Function.”

Sept 2015 World Congress of the OESO (World Organization for Specialized Diseases of the Esophagus), “Accurate in vivo Measurement of Luminal Muscle Stiffness for Clinical Application and the Role of Flacid Sphincteric Muscle in Chronic Reflux.”

Sept 2015 World Congress of the OESO (World Organization for Specialized Diseases of the Esophagus), “How can mathematical and computer modeling studies of the gastro-esophageal segment be used to provide both fundamental and clinically useful knowledge on the physiology and function of the gastro-esophageal segment, both in its protective function and especially in relationship to dysfunction?”

Sept 2015 World Congress of the OESO (World Organization for Specialized Diseases of the Esophagus), “What leads to remodeling changes in esophageal muscle stiffness and thickness and how do these changes impact circular and longitudinal muscle function in esophageal peristalsis?”

Sept 2015 World Congress of the OESO (World Organization for Specialized Diseases of the Esophagus), “What can we learn from engineering models of the esophagus?”

June 2015 Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Penn State University, invited plenary seminar with Jeffrey Mirocha (LNNL) "Interaction between Meso and Microscale Atmospheric Turbulence Dynamics: from the Meso Down and from the Micro Up.”

June 2015 2015 Symposium of the North American Wind Energy Academy (NAWEA), VA Tech, Invited Plenary Presentation, "High Performance Computing Analysis of Wind Turbine Response to Atmospheric Eddy Passage."

June 2015 KTH Mechanics, Stockholm, Sweden, "Nonsteady Wind Turbine Responses to Daytime Atmospheric Turbulence."

June 2015 AstraZeneca, Mölndal**,** Sweden, "An FDA-Funded Initiative for In Vivo and In Vitro Dissolution Modeling with Hydrodynamic Influences."

Feb 2015 The Johns Hopkins University Department of Mechanical Engineering Seminar Series, " Nonsteady Wind Turbine Response to the Passage of Turbulence Eddies within the daytime Atmospheric Boundary Layer from High Performance Computing."

Feb. 2015 A2e High-Fidelity Modeling Wind Plant Physics Planning Meeting, Arlington, VA, with Jeffrey Mirocha (LNNL): "Physics and Computational Challenges at the Mesoscale- Microscale Interface."

Jan 2015 GE Global Research, Niskayuna, NY. "The Penn State Cyber Wind Facility (CWF) Program."

Sept. 2014 Fluid Dynamics Research Consortium (FDRC) Seminar Series, Penn State, "*In vivo* vs. *In vitro* Dissolution and its Prediction with Mathematical Models."

August 2014 In Vivo Predictive Dissolution Conference, University of Michigan, "*In-Vivo* Hydrodynamic Relevance of *In Vitro* Dissolution Methods and Mathematical Models."

June 2014 NREL National Wind Technology Center, "Interactions between Atmospheric Eddies and Wind Turbine Blades analyzed using Blade-Boundary-Layer-Resolved Simulations within the Penn State Cyber Wind Facility."

June 2014 National Oceanographic and Atmospheric Administration (NOAA), Physical Sciences Division Seminar, "The Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral to Moderately Convective Stability States."

April 2014 Department of Bioengineering Seminar Series, Pennsylvania State University, "Multiscale Transport, Mixing, Absorption, and Drug Dissolution in the Intestine."

April 2014 National Wind Resource Center Seminar, Texas Tech University, "Transition in Atmospheric Boundary Layer Turbulence Structure from the Neutral to Convective Stability States in Relationship to Wind Turbine Response."

Nov 2013 Symposium on Frontiers of Fluid Dynamics, Puerto Rico, "Transition in Atmospheric Boundary Layer Turbulence Structure with Stability State Relevant to Wind Turbine Function."

Dec 2013 Symposium on Magnetic Resonance Imaging and Biophysical Analysis of GI Function, Nottingham, England, "Discoveries on the Mechanical Processes underlying Gastric Function in the Fed State."

Dec 2013 Symposium on Magnetic Resonance Imaging and Biophysical Analysis of GI Function, Nottingham, England, "In vivo Relevance of Drug Dissolution Tests."

Sept 2013 Keynote speaker, Argonne National Lab, Workshop on Atmospheric Modeling at LES Scales: Opportunities and Challenges, "Challenges and State of the Art in Wind Energy High Performance Computing."

Aug 2013 National Center for Atmospheric Research (NCAR), Research Applications Laboratory (RAL) Seminar Series, Boulder, CO. "The Surprising Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral to Convective Stability States."

June 2013 Invited Speaker, 5th World Conference on Drug Absorption, Transport and Delivery: Clinical Significance and Regulatory Impact (5th WCDATD) on June 24–26, 2013, in Uppsala, Sweden: "Dissolution Modeling: affects, single vs. multiple particles, *in vitro* vs. *in vivo*."

March 2013 GE Global Research, Münich, Germany, "The Penn State Cyber Wind Facility."

March 2013 Invited lecturer, von Karman Institute for Fluid Dynamics (VKI), Rhode-Saint-Genèse, Belgium. Lecture series entitled "Atmospheric Boundary Layer Modelling for Wind Engineering Applications." Presented 4.5 hours of lectures on three topics: (1) Introduction to Microscale Meteorology (with application to wind energy); (2) Large-eddy Simulation Methods for the Atmospheric Boundary Layer; (3) CFD Application to Wind Energy using Large-eddy Simulation.

March 2013 Plenary Speaker for the 11th Meeting of the European Drug Absorption Network (EDAN), University of Leuven, Belgium, "*In vivo* vs. *In vitro* Dissolution and its Prediction with Mathematical Models."

March 2013 AAPS/FIP Workshop on Biorelevant in Vitro Performance Testing of Orally Administered Dosage Forms, Bethesda, MD, "Gastrointestinal dissolution in biorelevant hydrodynamics vs. *in vitro* dissolution in the USP-II apparatus."

Dec 2012 Department of Energy (EERE), "The Penn State Cyber Wind Facility," Washington, DC.

Nov 2012 Sandia National Laboratory, Albuquerque, NM, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings as a Central Component to the Penn State 'Cyber Wind Facility'."

Oct 2012 Virginia Tech. University, Department of Aerospace and Ocean Engineering, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings as a Central Component to the Penn State 'Cyber Wind Facility'."

Oct 2012 AAPS Workshop on Oral Bioperformance and 21st Century Testing, Chicago IL, "Motility and Absorption in the Small Intestine."

Oct 2012 AAPS Workshop on Oral Bioperformance and 21st Century Testing, Chicago IL, "Modeling Hydrodynamics in the Intestine."

Sept 2012 University of Michigan, Department of Department of Pharmaceutical Sciences, "*In vivo* vs. *In vitro* Dissolution and its Prediction with Mathematical Models."

Sept 2012 Keynote Lecture, 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "What is biomechanics and what role does it play in diagnostics, surgical and non-surgical treatments of GI disorders?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "What are the differences in esophageal muscle between the striated, transition zone, proximal smooth muscle, distal smooth muscle and LES muscle? How do they affect the "in vivo" compliance and contractility of the esophagus?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "What is current understanding of the coordination of contraction passage from proximal to transition to smooth muscle esophageal segments?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "Is there a relationship among physiology/pathophysiology, function/dysfunction and biomechanics of longitudinal muscle in the esophagus?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "Is reflux possible in the presence of tone in the muscles within the gastro-esophageal sphincter?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "Is the definition of TLESR mechanical or physiological, and what is the evidence that TLESR is the cause of GERD?"

Sept 2012 11th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como Italy, "The Mechanical Process of Reflux with vs. without Lower Esophageal Distension."

Aug 2012	National Renewable Energy Laboratory (NREL) National Wind Technology Center (NWTC), "Visualization-based Data Interrogation to Explore Local Turbulent Vorticity-Strain-rate Dynamics modulated by Shear."
May 2012	University of Colorado Denver, Department of Bioengineering, "Multiscale Transport, Mixing and Absorption in the Intestine and Drug Dissolution In vitro vs. In vivo."
April 2012	University of Wyoming, Department of Mechanical Engineering and Wind Energy Research Center, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings from Large-Eddy Simulation of the Atmospheric Boundary Layer Coupled with AeroDyn."
March 2012	Computational Fluid Dynamics (CFD) in Medicine and Biology, the Dead Sea, Israel, "Application of Lattice Boltzmann Models to Investigate Multiscale Transport, Mixing And Drug Dissolution In The Intestine."
March 2012	Department of Mechanical Engineering Seminar Series, University of Tel Aviv, Israel, "Polymer-Turbulence Interactions Leading to Polymer Drag Reduction."
March 2012	National Center for Atmospheric Research (NCAR), Geophysical Turbulence Program, "Non Kolmogorov Elements in Small-scale Turbulence Dynamics: bypassing the Cascade."
Feb 2012	National Center for Atmospheric Research (NCAR), Geophysical Turbulence Program, "Accuracy in LES Prediction of the Atmospheric Surface Layer: the SFS Stress Model, the Surface Stress Model, and Numerical Friction."
Feb 2012	GE Global Research, Münich, Germany, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings from Large-Eddy Simulation of the Atmospheric Boundary Layer Coupled with AeroDyn."
Jan 2012	NREL National Wind Technology Center (NWTC) "Designing Large-Eddy Simulation of the Atmospheric Boundary Layer to Predict the Law-of-the-Wall, Part II: The Influence of the Surface Stress Model and Numerical Dissipation, and the Prediction of the von Kárman Constant."
Jan 2012	National Center for Atmospheric Research (NCAR), Geophysical Turbulence Program, "Transformation from Isotropic to Shear-dominated Turbulence in 3-D Physical and Spectral Space."
Dec 2011	University of Minnesota, St. Anthony Falls Laboratory, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings from Large-Eddy Simulation of the Atmospheric Boundary Layer Coupled with AeroDyn."
Dec 2011	National Oceanic and Atmospheric Administration (NOAA), Boulder, CO, "Designing Large-Eddy Simulation of the Atmospheric Boundary Layer to Predict the Law-of-the-Wall"
Nov 2011	NREL National Wind Technology Center (NWTC), Boulder, CO, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings."
Nov 2011	NREL National Wind Technology Center (NWTC), Boulder, CO, "Designing Large-Eddy Simulation of the Atmospheric Boundary Layer to Predict the Law-of-the-Wall."
Nov 2011	University of Colorado Department of Applied Mathematics Seminar Series, Boulder, CO, "Application of Lattice Boltzmann Biocomputation to Investigate Multiscale Transport, Mixing and Absorption in the Intestine."
Oct 2011	Mechanical Engineering Graduate Seminar Series, University of Colorado, "Improving the Accuracy of Large-Eddy Simulation of Boundary Layer Flows, with Application to the Atmospheric Boundary Layer and its Interaction with Wind Turbine Aerodynamics."
Sept 2011	Texas Tech University and the National Wind Resource Center, Lubbock, TX, "Interactions between Atmospheric Turbulence and Wind Turbine Loadings."
Sept 2011	Texas Tech University and the National Wind Resource Center, Lubbock, TX, "Structure of Atmospheric Boundary Layer Turbulence from Large-Eddy Simulation."
June 2011	6th AIAA Theoretical Fluid Mechanics Conference Honolulu, Hawaii, "Influences of Atmospheric Boundary Layer Turbulence Structure on the Space-time Variability in Wind Turbine Blade and Shaft Loadings."
May 2011	Mini Symposium on Gastro-intestinal Biopharmaceutics, AstraZeneca Pharmaceuticals, Mölndal, Sweden, "The Hydrodynamic Environment of the Small Intestine."
May 2011	Mini Symposium on Gastro-intestinal Biopharmaceutics, AstraZeneca Pharmaceuticals, Mölndal, Sweden, "Dissolution Modeling and Prediction: *In Vitro* vs. *In Vivo*."
May 2011	Risø National Laboratory for Sustainable Energy Technical University of Denmark, "Designing of Large-Eddy Simulation of the Atmospheric Boundary Layer to Predict the Law-of-the-Wall: Influence on Wind Turbine Aerodynamics."
Feb 2011	Universidad del Turabo, Caguas, Puerto Rico, NSF Workshop on "Wind Energy & Turbulence," "Penn State & NREL Wind Energy Collaborations."

Feb 2011	University of Texas Austin, Institute for Computational Engineering and Sciences, "Issues in the Design of Large-Eddy Simulations that are Independent of the Model for Subfilter Scale Fluxes."
Jan 2011	University of Colorado, Department of Mechanical Engineering Seminar Series, Boulder CO, "Improving the accuracy of large-eddy simulation of high Reynolds number boundary layer flows, with application to the atmospheric boundary layer and its interactions with wind turbine aerodynamics."
Aug 2010	Invited contributor to the CME course preceding the OESO 10th World Conference: "How I Understand the sequence of physio-pathologic events occurring in GERD."
Aug 2010	Invited presentation at the OESO 10th World Conference: "The protective mechanism of the sphincteric segment between the stomach and esophagus from a biomechanical perspective."
July 2010	University of Dublin Trinity College, Ireland, Bioengineering Department Seminar Series: “Macro-Micro Scale Interactions Associated with Motility and Nutrient Absorption in the Small Intestine analyzed with Lattice-Boltzmann Models.”
July 2010	University of Dublin Trinity College, Biophysics Program: “The Interplay among Anatomy, Physiology and Mechanics in the Protective Function of the Lower Esophageal Sphincter.”
July 2010	6th Turbulence Workshop of the Institute for Mathematical Sciences, Imperial College London: “Non-Kolmogorov Elements in Small-Scale Turbulence Dynamics: Bypassing the Cascade.”
June 2010	Atmospheric Turbulence and Boundary Layers: A symposium in honor of John C. Wyngaard, Penn State University: “My Years with John: ABL Structure and Deviations from M-O Similarity.”
April 2010	George Washington University Institute for Biomedical Engineering Seminar Series, Macro-Micro Scale Interactions Associated with Motility and Nutrient Absorption in the Small Intestine analyzed with Lattice-Boltzmann Models.”
Jan 2010	Meteorology Seminar Series, Pennsylvania State University, “How to Design Large-Eddy Simulation of the Atmospheric Boundary Layer to Capture Law-of-the-Wall.”
Sept 2009	Keynote Plenary Speaker, Fourth International Conference on Computational Bioengineering, Bertinoro, Italy, "The Integration of Micro and Macro Scale Motility in Nutrient Absorption in the Small Intestine: A Multigrid Lattice-Boltzmann Model."
May 2009	National Center for Atmospheric Research (NCAR), “Application of Interactive Visualization-based Data Interrogation to Explore Local Dynamics of Vorticity in Shear-dominated Turbulence.”
June 2009	Invited speaker at the 6th IEEE International Symposium on Biomedical Imaging: From Nano to Macro: "Multiscale Interactions in Gut Function."
March 2009	National Center for Atmospheric Research (NCAR), “Designing Large-Eddy Simulation of High Reynolds Number Wall-bounded Flows.”
Nov 2008	Invited Plenary Seminar at the 61st Annual Meeting of the American Physical Society Division of Fluid Dynamics, San Antonio, Texas: "Designing LES of High Reynolds Number Wall-bounded Flows."
Nov 2008	2nd Joint International Meeting of Neurogastroenterology and Motility, Luzern Switzerland, "Why gastric mechanics are important"
Nov 2008	2nd Joint International Meeting of Neurogastroenterology and Motility, Luzern Switzerland, "Introductory address to Young Investigators"
Oct 2008	Northwestern University Department of Engineering Sciences and Applied Mathematics Seminar Series, "Discovery of a Mechanical Mechanism for Gastro-Esophageal Reflux Disease with a Mathematical Model for the Opening of Thick-walled Elastic Tubes."
June 2008	Fifth International Workshop on Wall-Bounded Turbulent Flows, Baltimore, MD. "Understanding a Fundamental Inaccuracy in Large-Eddy Simulation of High Reynolds Number Boundary Layers."
May 2008	Penn State Hershey College of Medicine Gastroenterology and Hepatology, “The Interplay among Anatomy, Physiology and Mechanics in the Protective Function of the Lower Esophageal Sphincter.”
April 2008	Los Alamos National Laboratory, Frontiers in the Geoscience Lecture Series. "Requirements to Predict the Surface Layer with High Accuracy at high Reynolds Numbers using Large-Eddy Simulation."
April 2008	Sandia National Laboratory. "Predicting the Turbulent Wind Structure of the Atmospheric Surface Layer with Large-Eddy Simulation."
April 2008	Two invited presentations at the OESO 9th World Congress, Monaco: "The Interface between Mechanics and Physiology: Function and Dysfunction" and "Can the interplay between physiology and mechanics in the function and dysfunction of the pharyngo-esophageal gastro-esophageal segments be specified?"
Mar 2008	Penn State Engineering Science and Mechanics Seminar Series, "Requirements to Predict the Surface Layer with High Accuracy at high Reynolds Numbers using Large-Eddy Simulation."

Feb 2008	Princeton University, Dept. of Mechanical and Aerospace Engineering. "Understanding a Fundamental Inaccuracy in Large-Eddy Simulation of High Reynolds Number Boundary Layers."
Feb 2008	Cornell University Sibley School of Mechanical and Aerospace Engineering. "Requirements to Predict the Surface Layer with High Accuracy at High Reynolds Numbers using Large-Eddy Simulation."
Jan 2008	Applied Research Laboratory Seminar Series, Penn State. "Requirements to Predict the Surface Layer with High Accuracy at high Reynolds Numbers using Large-Eddy Simulation."
July 2007	Imperial College London Institute for Mathematical Sciences, "A Fundamental Explanation for the Over-prediction of Mean Shear in Large-eddy Simulation of Shear-dominated Surface Layers."
July 2007	NSF Cyber-Fluid Dynamics Workshop, "Computational Investigations of the Couplings between Macro-scale and Micro-scale Transport of Nutrient Molecules in the Intestines."
May 2007	Press Conference, Madrid, Spain, "Discovery of a Magenstrasse in the Human Stomach, and Implications to Drug Delivery."
Feb 2007	Symposium on the Longitudinal Muscles of the Gastrointestinal Tract, San Diego, CA, "Function of Longitudinal vs. Circular Muscle Fibers in Esophageal Peristalsis, deduced with Endoluminal Ultrasound and Mathematical Modeling."
Nov 2006	AstraZeneca Pharmaceuticals, Mölndal, Sweden, "Distinguishing GERD: Slight Distension of the Gastro-Esophageal Segment Enhances the Probability for Reflux, but Compliance Does Not."
Nov 2006	Imperial College, Turbulence Seminar Series, "Analyses of polymer-turbulence interactions in homogeneous shear from direct numerical simulation with the FENE-P model."
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus), Avignon, France, "Can manometry-EUS measurements give clinically useful information on the functioning of the circular and longitudinal muscle in patients with dysphagia or chest pain?"
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus) , Avignon, France, "What is the origin of tonic contractions in the LES?"
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus) , Avignon, France, "What is the relevance of the pressure trough separating the proximal and distal esophageal body motor patterns?"
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus), Avignon, France, "What is the biomechanical basis for esophageal pain?"
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus), Avignon, France, "What is the pattern of esophageal contractions in GERD?
Aug 2006	5th World Congress of Biomechanics, Munich, German, "Discoveries of Gastric Function with a Lattice Boltzmann Model of the Human Stomach," Keynote Address.
April 2006	W. G. Pritchard Lab Seminar Series, Penn State University Department of Mathematics, "Mathematics & Medicine: Transport vs. Physiology in the Esophagus"
Aug 2005	AstraZeneca, Mölndal Sweden, "New understanding of gastric emptying and flow dynamics in the stomach."
Aug 2005	Department of Thermo and Fluid Dynamics, Chalmers University, Gothenburg, Sweden: "Fundamentals Physics Underlying Polymer Drag Reduction, from Homogeneous DNS Turbulence with the FENE-P Model."
June 2005	Department of Mechanical Engineering, University of Utah, "Interdisciplinary Research in Biomechanics and Turbulence."
March 2005	Department of Aeronautics, Imperial College London, England, "Fundamentals of Polymer-turbulence Interactions from DNS of Homogeneous Turbulence."
March 2005	Department of Aeronautical Engineering, University of Southampton, England, "Fundamentals of Polymer Drag Reduction from DNS of Homogeneous Shear Turbulence"
Nov 2004	Research Institute for Mathematical Sciences(RIMS), Kyoto University, "How Shear alters the Evolution of Turbulence Structure in Physical Space and Spectral Space: DNS of Homogeneous Turbulence."
Nov 2004	Department of Mechanical Engineering, Kyoto University, "Polymer-turbulence Dynamics Underlying Drag Reduction: DNS of Homogeneous Turbulence with the FENE-P Model."
Oct 2004	International Symposium on Analysis of Instantaneous Turbulent Flows, "Fundamental Physics underlying Polymer Drag Reduction, from Homogeneous DNS Turbulence," Kyoto Institute of Technology, Kyoto, Japan.

Oct 2004	IUTAM Symposium on Elementary Vortices and Coherent Structures— Significance in Turbulence Dynamics, “Local scale representation and dynamics of vortical and strain-rate structures in evolving homogeneous shear flow,” Kyoto University, Kyoto, Japan.
Oct 2004	Bi-Annual Meeting of the American Motility Society, Rochester, MN, "Space-time impedance structure of the esophagogastric segment (EGS) during sphincter relaxation and opening." Prize-winning presentation by SJ Ghosh. Authors were: Ghosh, Pandolfino, Kahrilas, Shi, Hirano, Brasseur.
Mar 2004	American Association of Pharmaceutical Sciences Workshop: “Dissolution: New Technologies and Regulatory Initiatives, Bethesda, MD, “Combining computer simulation with in-vitro experiment to evaluate extended release tablet attrition in the fed stomach.”
Jan 2004	Aktuelle Forschung In Der Biomedizinischen Technik, Institute for Biomedical Engineering, ETH and Zürich University, Zürich, Switzerland, “The Virtual Stomach: Combining Computer Simulation with MRI to Explore Unknown Gastric Function.”
Nov 2003	Engineering Science and Mechanics Seminar Series, Pennsylvania State University, “Relationships between Physical and Fourier Space Dynamics of Burgers Shocklets through the Wavelet Transform”
Oct 2003	19th International Symposium on Gastrointestinal Motility, Barcelona, Spain, “Application of space-time pressure analysis to the clinical evaluation of pathophysiology of the pharyngo-esophageal segment.”
Oct 2003	Twelfth Annual Meeting of the Dysphagia Research Society, San Francisco, CA, “Mechano-Physiology of the Gastro-Esophageal Segment.”
April 2003	Public seminar series in applications of mathematics, ETH, Zürich, Switzerland, “Mathematics and Medicine: Transport vs. Physiology in the Esophagus.”
Jan 2003	Pharmacia Corporation, Kalamazoo, MI, “Gastric motility, tablet degradation and mixing in the stomach, studied using computer simulation”
Aug 2002	Professor P.Y. Chou's 100th Anniversary Symposium, Peiking University, Beijing China, "Polymer-Turbulence Dynamics in Isotropic Stationary Turbulence with the FENE-P Model."
Aug 2002	Workshop on New Developments in Subfilter-Scale (SFS) Closures, NCAR, Boulder Colorado, “Sub-filter-scale parameterization and large-eddy simulation of under-resolved and near-wall turbulence.”
Aug 2002	Fourth World Congress of Biomechanics, Calgary Canada, "Degradation of drug tablets and mixing in the stomach using computer simulation with the lattice-Boltzmann algorithm."
May 2002	Distinguished Lecturer, IIHR Hydroscience and Engineering Institute, University of Iowa, “Local Structure, Sub-Filter Modeling and Large-eddy Simulation of the Atmospheric Boundary Layer.”
April 2002	W. G. Pritchard Lab Seminar Series, Penn State University Department of Mathematics, “Long-range Scale Interactions in High-Reynolds Number Homogenous Turbulence and Consequences to Local Isotropy.”
April 2002	Grand Rounds Presentation, National Institutes of Health, Dept. of Rehabilitation Medicine, Physical Disabilities Branch, “Pressure-Flow Dynamics of the Pharyngo-Esophageal Segment in Health and Disease.”
Feb 2002	Bend Research, Inc., Bend, Oregon, “Gastric Motility and Degradation of Extended-Release Tablets in the Stomach Analyzed Using Computer Simulation.”
Feb 2002	AstraZeneca Pharmaceuticals, Mölndal, Sweden, “Degradation of Extended Release Tablets in the Stomach Using Computer Simulation.”
Nov 2001	Workshop on Methods for spatio-temporal analysis of GIT motor events, Madison, WI, “Quantification and interpretation of spatio-temporal maps.”
Nov 2001	Department of Bioengineering Seminar Series, University of Wisconsin, Madison, WI, “Pressure-flow dynamics of the pharyngo-esophageal segment in health and disease.”
Oct 2001	Los Alamos National Laboratory, Center for Nonlinear Studies, “Subgrid parameterization and other problems in large-eddy simulation of under-resolved and near wall turbulence.”
June 2001	Department of Gastroenterology and Hepatology, University of Iowa Medical School, Grand Rapids, Iowa, “Some Interesting Esophageal Muscle Behavior in Health and Disease,” and “The Stomach as Pump and Mixer, analyzed with Computer Simulation.”
Oct 2000	9th Annual Meeting of the Dysphagia Research Society, Savannah, GA. “Principles and Muscle Mechanics of Propulsion.”
Aug 2000	AstraZeneca Pharmaceuticals, Göteburg, Sweden, “Computer simulation of gastrointestinal mechanics at Penn State University.”
June 2000	Institute for Theoretical Physics, University of California, Santa Barbara, “Subgrid Dynamics and a new Subgrid Model in the Near-surface Turbulence.”

April 2000 Arizona State University, Department of Mathematics, Peristalsis and Biofilms Workshop, “Issues in Peristaltic Pumping and its Mathematical Representation.”

April 2000 Arizona State University, Environmental Fluid Dynamics Seminar Series, “Structure of the Unstable Atmospheric Boundary Layer and Issues in its Prediction with Large Eddy Simulation.”

Oct 1999 Pennsylvania State University, Department of Chemical Engineering Seminar Series, "Subgrid closure near rough walls in large-eddy simulation of high Reynolds number turbulent flows."

May 1999 Cambridge University, Department of Applied Mathematics and Theoretical Physics Seminar Series, England, "Connecting physical-space with spectral-space descriptions of turbulence using the wavelet transform."

June 1999 Isaac Newton Institute for Mathematical Sciences, Cambridge University, England, Symposium on Intermittency in Turbulent flows and other Dynamical Systems, "Physical-scale-space dynamics of intermittent Burgers shocklets."

May 1999 Imperial College, Department of Aeronautics Seminar Series, "SGS Dynamics and Closure Methodology for LES of Surface-layer Rough-wall Turbulence."

April 1999 Isaac Newton Institute for Mathematical Sciences, Cambridge University, England, Workshop on Mathematics of Closure, "SGS closure methodology for near-wall high-Reynolds number turbulence."

April 1999 Pennsylvania State University, Institute for High Performance Computing Seminar Series, "A pedagogical discussion on the numerical simulation of fully turbulent flows."

April 1999 Hoffman-LaRoche Pharmaceuticals, Basel, Switzerland, "Studies of gastric mixing and emptying using computer simulations."

March 1999 Atmospheric Processes Research Seminars, The Meteorological Office of Great Britain, Bracknell, England, "LES studies of atmospheric boundary layer structure and Monin-Obukhov similarity."

March. 1999 Isaac Newton Institute for Mathematical Sciences, Cambridge University, England,
Symposium on Turbulence Structure and Vortex Dynamics, "Transition from isotropic to shear-dominated vortex structure in physical and Fourier space."

Feb. 1999 Department of Aeronautics and Astronautics Seminar Series, Southampton University, England, "The earth's boundary layer, from an engineer's perspective."

Jan. 1999 Isaac Newton Institute for Mathematical Sciences, Cambridge University, England,
Workshop on Perspectives in the Understanding of Turbulent Flows, "Relationship between spatial structure and the Fourier description of scale in fully developed quasi-homogeneous turbulence," and "Dynamics underlying scale and structure interactions in fully developed quasi-homogeneous turbulence."

Oct. 1998 1998 International Meeting of the Dysphagia Research Society, "Manometry and Videofluoroscopy in Mechanical Modeling of the Pharynx."

June 1998 Penn State IBOS Summer Lecture Series, “Basic Mechanics of the Human Esophagus.”

May. 1998 International Conference on “Turbulence: Challenges for the 21st Century,” Los Alamos National Laboratory, “Physical-spectral space dynamics of Burgers' model of turbulence.”

March 1998 Keynote address, Colloquium on Fundamental Problematic Issues in Turbulence, Centro Stefano Francini, Monte Verita, Switzerland, “The lack of a simple paradigm in fully developed turbulence: characteristics of local concentrations of vorticity and Reynolds stress in turbulent shear flow.”

Feb. 1998 Keynote address, 16th International Symposium on Gastrointestinal Motility, Lorne Australia, “Relationships amongst Luminal Flow, Pressure and Gut Wall Contraction.”

Dec. 1997 Visiting Professor and Surgical Grand Rounds, University of Southern California School of Medicine, “Mechanical Processes Underlying the Esophageal and Crico-pharyngeal Functions.”

June. 1997 Colloquium on Turbulence Transport and Numerical Modeling, Center for Nonlinear Studies, Los Alamos National Laboratory, “Performance of Smagorinsky and Dynamic Closures in Anisotropic Near-Surface Turbulence.”

June 1997 ERCOFTAK U.K. South Special Topic Group on Turbulence Structure: “Structure and dynamics of the unstable atmospheric boundary layer from large-eddy simulation.”

Jan. 1997 Department of Bio-engineering, The Pennsylvania State University: “Analysis and Modeling of the Upper Esophageal Sphincter in Humans.”

Nov. 1996 Symposium on the Mechanics of Swallowing. 1996 Dysphagia Research Society Meeting, “Overview of the Mechanics of Swallowing,” “Mechanics of the Pharynx and Upper Esophageal Sphincter,” “Mechanics of the Esophagus.”

Oct. 1996 I.B.M. T.J. Watson Research Center, “Accuracy of the Lubrication Theory Approximations.”

July 1996	Workshop on Turbulence Modeling and the Theory of Hydrodynamic Instabilities, Chexbres, Switzerland, "Transfer of energy and phase information among scales in fully developed turbulence with passive scalar."
June 1996	ASME Applied Mechanics and Materials Symposium, Johns Hopkins University, "Accuracy of the lubrication theory approximations in peristaltic transport at low Reynolds numbers."
Jan. 1996	University Hospital, Zurich, Switzerland, "Analysis and Modeling of the Esophageal Function."
Dec. 1995	Graduate Hospital, University of Pennsylvania, "Analysis and Modeling of UES Opening and Transsphincteric Flow."
Aug. 1995	Invited speaker at Scaling Dynamics in Fluid Turbulence Workshop, Center for Nonlinear Studies, Los Alamos National Lab, "Subgrid-resolved scale dynamics in isotropic turbulence"
July 1995	Royal Adelaide Hospital, Adelaide, Australia, "Modelling of Oesophageal Wall Tension and Bolus Transport."
June 1995	Invited speaker/faculty at the 1st International Voice and Swallowing Symposium, Atlanta, GA, "Pressure-flow dynamics of pharyngeal and UES bolus transport."
April 1995	Department of Applied Mathematics and Theoretical Physics, Cambridge University, England, "Long-range scale interactions in fully developed turbulence."
Dec. 1994	California Institute of Technology, "Wavelet transforms as a link between physical and Fourier space."
Nov. 1994	University of California, San Diego, "Intermittent coherent structures in shear-flow turbulence."
Nov. 1994	University of Southern California, "Long-range scale interactions in fully developed turbulence."
Nov. 1994	Stanford University, "Wavelet transforms as a link between physical and Fourier space."
Nov. 1994	Center for Turbulence Research, "Structural relationships between physical and Fourier space in shear-flow turbulence."
Oct. 1994	Invited speaker/faculty at 3rd International Meeting of the Dysphagia Research Society, McLean, VA, "Interpretation of pharyngeal manometry."
Aug. 1994	Invited speaker at Frontiers in Geophysical Turbulence Workshop, Center for Nonlinear Studies, Los Alamos National Lab, "Long-range phase couplings in fully developed turbulence."
June 1994	Invited one hour address, AIAA Fluid Dynamics Conference, Colorado Springs, Colorado, "The wavelet decomposition: locality in Fourier space, locality in physical space and the relationship between the two."
May 1994	Johns Hopkins University, "Interscale interactions in stationary vs. nonstationary nonequilibrium turbulence."
April 1994	National Center for Atmospheric Research, "Local similarity at the small scales in low Reynolds number isotropic turbulence."
March 1994	Lehigh University, "Structure and statistics of scalar evolution in the flat plate turbulent boundary layer using direct simulations."
July 1993	Invited paper at Nonlinear Dynamics and Stochastic Processes Workshop, Center for Nonlinear Studies, Los Alamos National Lab, "Interscale Interactions in High Reynolds Number Turbulence."
Nov. 1992	The State-of-the-Art Lecture, First International Meeting of the Dysphagia Research Society, Milwaukee, WI, "Mechanical Analysis of Esophageal Bolus Transport."
Oct. 1992	Invited paper at SIAM Conference on Applications of Dynamical Systems, Salt Lake City, Utah, "The Wavelet Transform as a Link between Physical Space and Fourier Space."
July 1992	Ecole Centrale de Lyon, France, "Intermittency and Anisotropy Analyzed using 3D Wavelet Transforms."
July 1992	Ecole Nationale Superieure, Grenoble, France, "Interscale Interactions in High Reynolds Number Turbulence."
April 1992	CUNY/Levich Institute, "Issues in High Reynolds Number Turbulence, Spectral Dynamics, and Local Isotropy."
April 1992	Brown University, "Combined Graphical and Quantitative Analysis of Intermittent Regions in Homogeneous Turbulence."
March 1992	Yale University, "Issues in High Reynolds Numbers Turbulence Interscale Interactions."
March 1992	Los Alamos National Laboratory, "Turbulence Dynamics via Triadic Interactions."
Oct. 1991	Florida State University, "Mechanics of the Esophageal Phase of the Human Swallowing Process."
Sept. 1991	Ecole Centrale de Lyon, France, "Large and Small Scale Couplings in High Reynolds Number Turbulence."
July 1991	Northwestern Medical School and Medical College of Wisconsin, "Biomechanics of the Transition from Striated to Smooth Muscle in the Human Esophagus."

April 1991	AFOSR Contractors Meeting, Ohio State, "Turbulence Structural Dynamics."
April 1991	Rutgers University, "Interactive Use of Graphical Imaging and Quantitative Measures in the Analysis of 3D Turbulence Data Sets."
March 1991	Penn State University Combustion and Propulsion Seminar Series, "Modification of Small Scale Turbulence Structure by Large Scale Forcing."
Feb. 1991	University of Maryland, "Analysis of Intermittent Characteristics in Turbulence."
May 1990	Cornell University, "Characteristics of Intermittent Regions in Homogeneous Turbulent Shear Flow."
March 1990	Invited Speaker at Third International Symposium on Dysphagia, Johns Hopkins Medical Institution, "What Does Manometry Measure?"
Feb. 1989	NASA-Langley, "Development of a 3D Graphics and Post-processing Facility"
Oct. 1988	Yale University, "Local Structure of Intercomponent Energy Transfer in Homogeneous Turbulent Shear Flow."
April 1988	Michigan Technological University, "Local Structure of Intercomponent Energy Transfer in Homogeneous Turbulent Shear Flow."
Nov. 1987	Clemson University, Mechanical Engineering Seminar Series, "Structure of Pressure-strain-rate Events in Homogeneous Turbulent Shear Flow."
Sept. 1987	Invited paper at 1987 Society of Engineering Science Meeting, Salt Lake City, Utah, "Spectral Energy Exchange Among Fourier Modes in Navier-Stokes Evolution."
Mar. 1987	Clemson University, Bioengineering Colloquium, "Peristaltic Transport in the Esophagus"
Feb. 1987	SUNY at Stony Brook, "Spectral Energy Exchange Among Fourier Modes in Navier-Stokes Evolution."
Feb. 1986	Invited Speaker at First Symposium on Dysphagia, The Johns Hopkins Medical Institutions, "A Fluid Mechanical Perspective on Swallowing."
Sept. 1985	Invited paper at 19th Midwest Mechanics Conference, Columbus, Ohio, "Effect of Geometry in Wavenumber Space on the Evolution of Triads of Velocity Fourier Modes in Inviscid Flows."
March 1985	The University of Maryland, Fluid Dynamics Reviews Seminars, "Behavior Trends in the Spectral Evolution of the Euler Equations for Triads of Fourier Modes."
March 1985	Harvard University, Division of Applied Sciences, and The Johns Hopkins University, Jan. 1985 Physiological Fluid Mechanics and Transport Seminar Series, "The Effect of a Peripheral Layer of Different Viscosity on Peristaltic Pumping."
April 1982	Universita di Roma, Instituto di Aerodinamica, Italy, "Kinematics and Dynamics of Vortex Rings, Experimental and Theoretical Study," and "A Theoretical Approach to the Study of Bluff Bodies in Ground Effect."
Oct. 1981	University of Leeds, Dept. of Applied Mathematics, England, "A Kinematic Analysis of Vortex Rings in a Tube."
Aug. 1980	Invited speaker at The Stanford Sun-Weather Workshop, Stanford University, "Vorticity, Total Circulation, and the Vorticity Area Index."

PRESENTATIONS AT MEETINGS (NOT LISTED ABOVE)

Nov 2020	73nd Annual Meeting of the APS Division of Fluid Dynamics, 23-26 November, Chicago/virtual (1 paper)
Nov 2019	72nd Annual Meeting of the APS Division of Fluid Dynamics, 22-24 November, Seattle, WA (1 paper)
January 2019	AIAA SciTech Meeting, San Diego, CA, 7-11 January (3 papers)
June 2019	Wind Energy Science Conference, Cork, Ireland 17-20 June 2019 (2 papers)
March 2019	11th US National Combustion Meeting, 24-27 March 2019, Pasadena, CA (1 paper)
Nov 2018	71st Annual Meeting of the APS Division of Fluid Dynamics, November 18-20, Atlanta, GA. (3 papers)
Nov 2017	70th Annual Meeting of the APS Division of Fluid Dynamics, November 17-21, Denver, CO. (3 papers)
April 2017	10th U. S. National Combustion Meeting, April 23-26, 2017, College Park, MD. (1 paper)
Nov 2017	69th Annual Meeting of the APS Division of Fluid Dynamics, November 20-22, Portland, OR (3 papers)
Aug 2017	16th European Turbulence Conference, 21-24 August, 2017, Stockholm, Sweden (1 paper)
Nov 2016	2016 AAPS (American Association of Pharmaceutical Scientists) Annual Meeting, Denver, CO (1 poster)
Jan 2016	SciTech, Annual Meeting of the AIAA, San Diego, CA (2 Papers)
Nov 2015	68th Annual Meeting of the APS Division of Fluid Dynamics, November 22-24, Boston, MA. (3 papers)

Oct 2015	2015 AAPS (American Association of Pharmaceutical Scientists) Annual Meeting and Exposition, Orlando, FL. (1 paper)
June 2015	Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS), Penn State University (6 papers)
June 2015	North American Wind Energy Academy (NAWEA), VA Tech (1 paper)
Nov 2014	67th Annual Meeting of the APS Division of Fluid Dynamics, November 23–25, San Francisco, CA. (3 papers)
May 2014	2nd Symposium on OpenFOAM in Wind Energy, May 19-21, Boulder, CO (4 papers)
March 2014	5th Symposium on Hybrid RANS-LES Methods, Texas A&M, Houston, TX, 19-21 March (1 paper)
Jan 2014	SciTech, Annual Meeting of the AIAA, Harbor Place, MD (4 Papers)
Nov 2013	66th Annual Meeting of the APS Division of Fluid Dynamics, November 24–26, Pittsburg, PA. (6 papers)
Oct 2013	International Conference on Future Technologies for Wind Energy, 7-9 Oct. 2013, Laramie, WY (1 paper)
March 2013	March Meeting of the American Physical Society, Denver, CO (1 paper)
Nov 2012	65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA (1 paper)
June 2012	7th OpenFOAM Workshop, Center of Smart Interfaces, Technische Universit• at Darmstadt, Germany (1 paper)
Feb 2012	Wind Energy and the Impact of Turbulence on the Conversion Process, EUROMECH Colloquium 528, Oldenburg, Germany (2 papers)
Jan 2012	50th AIAA Aerospace Sciences Meeting, Nashville, TN (3 papers)
Nov 2011	64th Annual Meeting of the APS Division of Fluid Dynamics, Baltimore, MD (4 papers)
Jan 2011	49th AIAA Aerospace Sciences Meeting, Orlando, FL (1 paper)
Nov 2010	63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, CA (5 papers)
Nov 2010	World Congress of the International Pharmaceutical Federation and Annual Meeting of the American Association of Pharmaceutical Science, New Orleans, LA (1 paper)
Aug 2010	19th Symposium on Boundary Layers and Turbulence, American Meteorology Society, Keystone CO (2 papers)
June 2010	16th U.S. National Congress of Theoretical and Applied Mechanics (USNCTAM), Pennsylvania State University (3 papers)
Nov 2009	62nd Annual Meeting of the APS Division of Fluid Dynamics, Minneapolis, MN (3 papers)
Nov 2009	Bioperformance Workshop: Gastrointestinal Hydrodynamics and Drug Dissolution – Achieving Physiologic Relevance and Meaningful Test Methods, Penn State University, 2 presentations
April 2009	International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii (2 papers)
Nov 2008	61st Annual Meeting of the APS Division of Fluid Dynamics, San Antonio (2 papers)
Nov 2008	2nd Joint International Meeting of Neurogastroenterology and Motility, Luzern Switzerland, (2 presentations, 3 posters, best abstract award to primary author (Dr. Ghosh))
Aug 2008	SIAM Meeting on the Life Sciences, Montreal, Canada (3 presentations, best poster award)
Feb 2008	NCAR, Theme-of-the-Year 2008 Geophysical Turbulent Phenomena Workshop on "Turbulent Theory and Modeling, "Requirements to Predict the Surface Layer with High Accuracy at High Reynolds Numbers using Large-eddy Simulation" and "Designing Simulations to Overcome the Surface Layer Overshoot of Mean Shear in Large-Eddy Simulation of the Neutral Atmospheric Boundary Layer."
Nov 2007	60th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Salt Lake City, Utah (4 papers)
Oct 2007	The American College of Gastroenterology Annual Scientific Meeting, Philadelphia, PA (1 paper).
Nov 2006	59th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Tampa, FL (1 paper)
Sept 2006	8th World Congress of OESO (World Organization for Specialized Studies on Diseases of the Esophagus), Avignon, France (10 papers)
Nov 2005	58th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Chicago, IL (5 papers)
Oct 2005	2005 Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH (2 papers).
June 2005	4th International Symposium on Turbulence and Shear Flow Phenomena, Williamsburg, VA (1 paper).
June 2005	NIA/ERCOFTAC workshop on Spectral theories of turbulence and their applications. Newport News, VA (1 paper)

June 2005	14th Intl. Workshop on Numerical Methods for Non-Newtonian Flows, Santa Fe, NM (1 paper)
May 2005	2nd International Symposium on Seawater Drag Reduction, Pusan, Korea (1 paper).
May 2005	Digestive Diseases Week, Meeting of the American Gastroenterological Association (4 papers).
Nov 2004	57th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Seattle, WA (3 papers)
Oct 2004	Biannual Meeting of the American Motility Society, Rochester, MN (2 papers)
May 2004	Digestive Diseases Week, Meeting of the American Gastroenterological Association (1 paper).
Nov 2003	56th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, New Jersey (5 papers).
Nov 2003	Annual Meeting of the American Institute of Chemical Engineers, San Francisco (1 paper).
Oct. 2003	19th International Symposium on Gastrointestinal Motility, Barcelona, Spain (2 papers).
May 2003	Digestive Diseases Week, Meeting of the American Gastroenterological Association, Orlando, FL (8 papers).
Nov 2002	55th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Dallas, TX..
Oct 2002	11th European Symposium on Neurogastroenterology and Motility, Tübingen, Germany (2 papers)
Sept 2002`	Annual Meeting of the American Motility Society, Galveston, TX (2 papers)
May 2002	Digestive Diseases Week, Meeting of the American Gastroenterological Association, San Diego, CA (3 papers).
Nov 2001	54th Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, San Diego, CA (2 papers).
Nov 2001	18th International Symposium on Gastrointestinal Motility, Madison, WI.
Oct 2001	10th International Meeting of the Dysphagia Research Society, Albuquerque, NM (2 papers)
May 2001	Digestive Diseases Week, Meeting of the American Gastroenterological Association, Atlanta, GA (5 Papers)
Nov 2000	53rd Annual Meeting of the Amer. Physical Society Div of Fluid Dynamics, Washington, DC (5 papers).
Oct 2000	9th International Meeting of the Dysphagia Research Society, Savannah, GA (2 papers).
May 2000	Digestive Diseases Week, Meeting of the American Gastroenterological Association, San Diego, CA (10 Papers)
April 2000	Advanced Simulation Technologies Conference 2000, High Performance Computing Symposium, Washington D.C.
Aug 2000	20th International Congress of Theoretical and Applied Mechanics (ICTAM), Chicago, IL
Nov 1999	52nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, New Orleans, LA.
Oct 1999	8th International Meeting of the Dysphagia Research Society, Burlington, Vermont.
Sept 1999	17th International Symposium on Gastrointestinal Motility, Bruges, Belgium.
May 1999	Digestive Diseases Week, Meeting of the American Gastroenterological Association,, Orlando, FL (2 papers)
May 1998	Digestive Diseases Week, Meeting of the American Gastroenterological Association,, New Orleans, LA (4 papers)
Nov 1998	51st Annual Meeting of the American Physical Society Division of Fluid Dynamics, Philadelphia, PA (5 papers)
Jan. 1998	Workshop on the Enhancement of Student Learning: Course Coordination and Pedagogical Technique, Penn State Conference Center, PA.
Nov. 1997	50th Annual Meeting of the American Physical Society Division of Fluid Dynamics, San Francisco, CA.
Oct. 1997	6th International Meeting of the Dysphagia Research Society, Toronto, Canada (3 papers)
Sept. 1997	Eleventh Symposium on Turbulent Shear Flows, Grenoble, France (1 paper).
Aug. 1997	Workshop on the Enhancement of Student Learning: Constructing Effective Use of Student Out-of-Class Time, Penn Stater Conference Center.
Aug. 1997	12th Symposium on Boundary Layers and Turbulence, American Meteorological Society, Vancouver, Canada (4 papers)
June 1997	Euromech Colloquium on the "Dynamics and Statistics of Concentrated Vortices in Turbulent Flows," Carry-le-Rouet, France (2 papers).
Nov. 1996	49th Annual Meeting of the American Physical Society Division of Fluid Dynamics, University of California, Syracuse, NY (5 papers).
Nov. 1996	5th International Meeting of the Dysphagia Research Society, Aspen, Colorado (3 papers)

July 1996	Seventh International Long Range Sound Propagation Meeting, Lyon, France.
July 1996	6th European Turbulence Conference, Lausanne, Switzerland.
May 1996	Digestive Diseases Week, Meeting of the American Gastroenterological Association, Washington, D.C.
Nov. 1995	48th Annual Meeting of the APS Division of Fluid Dynamics, University of California Irvine (2 papers).
Oct. 1995	4th International Meeting of the Dysphagia Research Society, McLean, VA.
Aug. 1995	Tenth Symposium on Turbulent Shear Flows, Pennsylvania State University, University Park (2 papers).
June 1995	1st International Voice and Swallowing Symposium, Atlanta, GA.
March 1995	11th Symp. on Boundary Layers and Turbulence (American Meteorological Society), Charlotte (3 papers).
Nov. 1994	47th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Atlanta, Georgia (5 papers).
Oct. 1994	3rd International Meeting of the Dysphagia Research Society, McLean, VA (2 papers).
Nov. 1993	46th Annual Meeting of the American Physical Society Division of Fluid Dynamics, University of New Mexico, Albuquerque, NM (2 papers).
Oct. 1993	2nd International Meeting of the Dysphagia Research Society, Lake Geneva, Wisconsin.
Sept. 1993	CERCA International Workshop on Large-Eddy Simulations of Turbulent Flows and Engineering and the Environment, Montreal, Canada.
May 1993	Digestive Diseases Week, Meeting of the American Gastroenterological Association,, Washington, D.C.
March 1993	Multiscale Stochastic Processes Analyzed using Multifractals and Wavelets, Cambridge University, England (2 papers).
March 1993	International Conference on Near-wall Turbulent Flows, Arizona State, Tempe, Arizona.
Nov. 1992	45th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Florida State University, Florida (8 papers).
Oct. 1992	Seventh Biennial Meeting of the American Motility Society, San Francisco, CA.
June 1992	The 4th European Turbulence Conference, Delft, The Netherlands.
June 1992	AFOSR/ONR Contractor's Meeting, IIT, Chicago, IL.
Nov. 1991	44th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Arizona State University, Phoenix, Arizona (2 papers).
Sept. 1991	Eighth Symposium on Turbulent Shear Flows, Munich, Germany.
Sept. 1991	First European Fluid Mechanics Conference, Cambridge, England.
June 1991	USA-French Workshop on “Wavelets and Turbulence,” Princeton University, New Jersey.
May 1991	American Gastroenterological Meeting, New Orleans, Louisiana (2 papers)
April 1991	AFOSR Contractors Meeting, Ohio State University, Columbus, Ohio (2 presentations).
Jan. 1991	AIAA 29th Aerospace Sciences Meeting, Reno, Nevada (2 papers).
Nov. 1990	43rd Annual Meeting of the American Physical Society Division of Fluid Dynamics, Cornell University, Ithaca, New York (7 papers).
Nov. 1990	12th Annual Intern. Conf. of the IEEE Engineering in Medicine and Biology Society, Philadelphia, PA.
Oct. 1990	Sixth Biennial Meeting of the American Motility Society, Newport, Rhone Island (2 papers)
July 1990	The 3rd European Turbulence Conference, Stockholm, Sweden.
June 1990	CSME/ASME Mechanical Engineering Forum, Toronto, Canada (2 papers)
March 1990	16th Annual Northeast Bioengineering Conference, Pennsylvania State University, University Park, PA.
Nov. 1989	42nd Annual Meeting of the APS Division of Fluid Dynamics, Stanford University, Palo Alto (2 papers).
May 1989	American Gastroenterological Meeting, Washington, DC.
Nov. 1988	41st Annual Meeting of the APS Division of Fluid Dynamics, SUNY Buffalo, New York.
May 1988	Fifth Motility Society Meeting, Asimolar, California.
Aug. 1988	The 2nd European Turbulence Conference, W. Berlin, Germany.
Nov. 1987	40th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Eugene, Oregon.
March 1987	13th Northeast Bioengineering Conference, Philadelphia, Pennsylvania.
July 1986	The European Turbulence Conference, Lyon, France.

May 1986	AIAA/ASME 4th Joint Fluid Mechanics, Plasma Dynamics and Lasers Conference, Atlanta, Georgia.
Nov. 1985	38th Annual Meeting of the American Physical Society Division of Fluid Dynamics, University of Arizona, Tucson, Arizona.
Nov. 1984	37th Annual Meeting of the American Physical Society Division of Fluid Dynamics, Brown University, Providence, Rhone Island.
July 1980	AIAA 13th Fluid and Plasma Dynamics Conference, Snowmass, Colorado.
June 1979	Joint ASME-CSME Applied Mechanics, Fluids Engineering, and Bioengineering Conference, Niagara Falls, New York.

AWARDS, HONORS AND FELLOWSHIPS

2015 Invited Plenary Speaker, 2015 Symposium of the North American Wind Energy Academy (NAWEA), "High Performance Computing Analysis of Wind Turbine Response to Atmospheric Eddy Passage."

2013 Invited Plenary Speaker, 11th Meeting of the European Drug Absorption Network (EDAN), University of Leuven, Belgium, "*In vivo* vs. *In vitro* Dissolution and its Prediction with Mathematical Models."

2012 Elected Inaugural Chair of the APS Topical Group on the Physics of Climate (GPC).

2010 Invited Paper by the *Physics of Fluids*: "Designing Large-Eddy Simulation of the Turbulent Boundary Layer to Capture Law-of-the-Wall Scaling"

2010 Voted onto the graduate faculty of Aerospace Engineering, Pennsylvania State University.

2009 Elected Fellow of the American Physical Society (via the Division of Fluid Dynamics).

2008 Invited Plenary Speaker at the 61st Annual Meeting of the American Physical Society Division of Fluid Dynamics, San Antonio, Texas.

2008 Elected to the Executive Committee of the American Physical Society (> 48,000 members)

2007 Elected to the Permanent Scientific Committee of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO)

2006 Elected onto the Council of the American Physical Society representing the Division of Fluid Dynamics

2006 Courtesy Appointment in Department of Mathematics, Pennsylvania State University

2002 Distinguished Lecturer, IIHR Hydroscience and Engineering Institute, University of Iowa.

2000 Inducted into The Johns Hopkins University Society of Scholars (Fellow of The Johns Hopkins University)

1999 Visiting Fellow of Wolfson College, Cambridge University, England.

1999 Elected President of the Dysphagia Research Society (a medical society)

1997 Distinguished Lecturer and Surgical Grand Rounds, University of Southern California Medical School.

1997 Secretary-Treasurer, Dysphagia Research Society

1994- Governing Board, Dysphagia Research Society

1996 Penn State Engineering Society Outstanding Research Award

1994-present: Editorial Board, *Dysphagia*, (international journal on swallowing disorders)

1992 State-of-the-Art Lecture, 1st International Meeting, Dysphagia Research Society.

1986 Provost Research Award, Clemson University.

1983 Postdoctoral Fellowship, The Johns Hopkins University.

1980 Research Fellowship, University of Southampton, England.

1979 National Research Council Research Associateship, NASA-Ames Research Center.

1977 Departmental Research Assistantship (competitive), Stanford University.

1977 AIAA Student Paper Conference, Seattle. First place, 'unlimited' category.

1976 AIAA Student Paper Conference, Los Angeles. Second place, 'masters' category.

1969 Maryland State Senatorial Scholarship.

SOCIETY MEMBERSHIPS

American Association of Pharmaceutical Scientists (since 2015)

American Meteorological Society (since 2010)

American Institute of Aeronautics and Astronautics (2011-2019)

OESO, World Organization for Specialized Studies on Diseases of the Esophagus, full member 2007-2016

American Physical Society (Division of Fluid Dynamics), Full Member (since 1983).

American Society of Mechanical Engineers, Full Member (since 1985).

Euromech, Full Member (since 1998)

American Gastroenterological Association, Full Member 1998 - 2008.

American Physiological Society, Full Member 2001- 2008.

EDITORIAL, SOCIETY BOARD, OFFICER, COMMITTEES

2013-2014	Executive Committee (Past Chair) of the American Physical Society Topical Group on the Physics of Climate (GPC)
2012-2013	Chair of the American Physical Society Topical Group on the Physics of Climate (GPC)
2011-2012	Member of the Organization Committee and Nomination Committee for the formation of a new American Physical Society (APS) "Topical Group on the Physics of Climate" (GPC).
2010 - present	OESO Board of Scientific Direction (World Organization for Specialized Studies on Diseases of the Esophagus)
2009 - 2010	Executive Board, the American Physical Society
2007 - 2010	Executive Committee, the Division of Fluid Dynamics of the American Physical Society
2007 - 2010	Member of the APS Council (American Physical Society) representing the Division of Fluid Dynamics
2007 - 2012	Founding Chair, primary organizer, then past chair of the Media and Science Relations Committee of the Division of Fluid Dynamics of the American Physical Society.
2006 - 2008	External Affairs Committee, American Physical Society Division of Fluid Dynamics
2007 - present	Executive Committee of the OESO (World Organization for Specialized Studies on Diseases of the Esophagus)
2006 - present	Permanent Scientific Committee of the OESO (World Organization for Specialized Studies on Diseases of the Esophagus)
2004 - 2005	Acrivos Award Committee (Chair 2005), American Physical Society Division of Fluid Dynamics
1999	President of the Dysphagia Research Society
1998	President Elect, Dysphagia Research Society
1997	Secretary-Treasurer, Dysphagia Research Society
1994 - present	Editorial Board, *Dysphagia*, (international journal on swallowing disorders)
1994 - 2002	Governing Board, Dysphagia Research Society

OTHER PROFESSIONAL ACTIVITIES

Short Course Participation

Oct 2016	The University of Rome 'Tor Vergata', 3 lectures in 1-week short course entitled "HPC Applications to Turbulence and Complex Flows": (1) "Important Turbulence Concepts Underlying Large-Eddy Simulation", (2) "Understanding Large-Eddy Simulation", (3) "Closure of the LES Equations: Subfilter-Scale (SFS) Modeling"
May 2016	TU Darmstadt, Germany, Presented a 1-week short course entitled "Large-Eddy Simulation of Wall-Bounded Turbulence."
March 2012	Lecturer at the von Karman Institute for Fluid Dynamics (VKI), Rhode-Saint-Genèse, Belgium, in lecture series entitled "Atmospheric Boundary Layer Modelling for Wind Engineering Applications."
Aug 2011	Participant in the *Penn State Wind Energy Engineering Short Course*, "Microscale Atmospheric Turbulence and Wind Turbine Interactions."
Nov/Dec 2010	Participant in the *Gamesa Wind Energy Short Course*, "Meteorological and Topographic Siting Influences."
Aug 2010	Participant in the OESO Continuing Medical Education (CME) course, "How I Understand the sequence of physio-pathologic events occurring in GERD."

Major Efforts for Funding Agencies

Feb 2017 NSF Panel Review

Feb 2017	NIH Panel Review
Feb 2015	DOE A2e workshop on Wind Plant Physics and Modeling, Arlington, VA.
Jan 2015	DOE A2e High Fidelity Modeling: ModSim Environment Strategic Planning Meeting. Denver, CO.
April 2014	DOE A2e High Fidelity Modeling Working Group Meeting. NREL, Golden, CO.
March 2014	DOE Wind Energy Program Peer Review Meeting, Arlington, VA.
Jan 2014	DOE A2e Working Group on High-Fidelity Modeling for Wind Energy. at Sandia National Laboratories, Albuquerque, NM.
Dec 2010	NSF Division of Cyberinfrasturcture: NSF site review of the "Gordon Project" at the San Diego Supercomputing Center (SDSC), funded by the NSF.
Dec 2009	NSF Division of Cyberinfrasturcture: NSF site review of the "Gordon Project" at the San Diego Supercomputing Center (SDSC), funded by the NSF.
Aug 2009	NSF review for the fluid dynamics program form the APS Division of Fluid Dynamics, presenter.
Jan 2009	NSF Division of Cyberinfrasturcture: panel review of a set of proposals for "track 2" data-intensive computing system. These were $22M dollar awards.

Consulting and Industry Relations

2016-2017	Ethicon Endo-Surgery, Inc. a Johnson & Johnson company Consulting related to gastro-intestinal physiology and mechanics with application to bariatric surgery
2011-2016:	GE Global Research, industry partners in the DOE-funded Penn State Cyber Wind Facility Program. Collaborative R & D efforts with internal GE funding.
2007-2009:	W.L. Gore & Associates
2004:	Apneon, Inc.
2000-2002:	Bard Endoscopic Technologies
1998	Boston Scientific

Major University Activities, Pennsylvania State University

- 2015, Member of Search Committee for the Associate Dean for Research, College of Engineering
- 2010-2014, Promotion and Tenure Committee, Department of Mechanical Engineering.
- 2010-2011, Honors Advisor, Department of Mechanical Engineering.
- 2007-2009, Seminar Committee, Department of Mechanical Engineering.
- 1996-2012, Course Leader, Fluid Mechanics, Department of Mechanical and Nuclear Engineering, and member of the Curriculum Improvement Committee.
- 1996-2012, member of MNE Department Curriculum Improvement Committee
- 2000-2008, member of MNE Department Environment Committee
- 2004 - 2006, Advisor to Mechanical and Nuclear Engineering Graduate Student Council.
- 2002 - 2003, Director, Graduate Computing Laboratory in the Department of Mechanical and Nuclear Engineering
- 1997-2000, Chair of subcommittee under the Penn State Faculty Senate Committee on Undergraduate Education which developed a Consultative and Advisory Report to the Faculty Senate entitled "Toward a More Vibrant Learning Culture at Penn State," approved by the Penn State Faculty Senate April 2000.
- Primary Organizer, "Workshop on the Enhancement of Student Learning: Course Coordination and Pedagogical Technique," Penn State Conference Center, January 1998, Department of Mechanical and Nuclear Engineering.
- Primary Organizer, "Workshop on the Enhancement of Student Learning: Constructing Effective Use of Student Out-of-Class Time," Penn State Conference Center, August 1997, Department of Mechanical and Nuclear Engineering.

Meeting/Symposium/Workshop Organization

- Organizer of Mini-symposium at the 2018 Annual Meeting of the APS Division of Fluid Dynamics in Atlanta, GA: "Prediction of Highly Turbulent Premixed Combustion in LES Frameworks."
- WindTech LOC, 24-26 October 2017, National Center for Atmospheric Research, Boulder Co, Executive Committee
- APS Division of Fluid Dynamics 2017 Annual Meeting, November 2017, Ames, IO, Local Organizing Committee
- North American Wind Academy (NAWEA) 2017 Meeting, 26 - 29 September 2017, Executive Committee
- Symposium organizer (two symposia) in the OESO 2015 International Meeting in Monaco, 31 August - 2 September 2015 (World Organization for Specialized Diseases of the Esophagus; http://www.oeso.org/monaco_conference2015/)

- Meeting Chair (with Charles Meneveau) and Organizer (with Rob Kunz) of "International Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation (ICMIDS)," June 15-17, 2015, Pennsylvania State University, State College, PA, USA.
- Co-organizer of Mini Symposium sponsored by the APS Topical Group on the Physics of Climate at the 66th Annual Meeting of the APS Division of Fluid Dynamics: "DFD/GPC Minisymposium: Global Climate Models: Dynamical Cores, Strengths and Weaknesses," November 2013, Pittsburgh, PA.
- Co-organizer for Workshop on Atmospheric Modeling at LES Scales: Opportunities and Challenges, Argonne Nat. Lab, Sept 2013.
- Primary Organizer of Grand Forum 4, “Defining the true multi-disciplinary approach in esophageal disease,” 11th World Conference of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Como, Italy, Sept. 2012.
- Co-organizer of the Topical Forum, "The esophago-gastric junction," at the OESO 10th World Conference, Boston MA, 28-31 August 2010.
- Organizer of three symposia at the 16th US National Congress on Theoretical and Applied Mechanics (USNCTAM) June 27 - July 2, 2010.
- Co-organizer of the Meeting, "Atmospheric Turbulence and Boundary Layers," in honor of John C. Wyngaard o gis retirement, 24-25 June 2010, Penn State University.
- Organizer: Bioperformance Workshop: Gastrointestinal Hydrodynamics and Drug Dissolution – Achieving Physiologic Relevance and Meaningful Test Methods, Sponsored by AstraZeneca Pharmaceuticals at Penn State University, 4-6 November 2009.
- Organizer of two symposia for the SIAM Conference on the Life Sciences, Montreal, Canada, 4-7 August 2008.
- Symposium Organizer, " Interdisciplinary Approaches to Understanding GERD: the Interface between Physiology and Mechanics," 9th World Congress of the World Organization for Specialized Studies on Diseases of the Esophagus (OESO), Monaco, Monte Carlo, 6-9 April 2008.
- Symposium Organizer, " Novel Assessment Tools in Swallow Evaluation: Relating Physiology to the Mechanics of Oro-Pharyngo-Esophageal Function," The Twelfth International Meeting of the Dysphagia Research Society, October 2003, San Francisco, CA.
- Meeting Organizer and Course Leader, The Eighth International Meeting of the Dysphagia Research Society, October 1999, Burlington, Vermont.
- Symposium Organizer, "Application of Basic Principles of Motility and Mechanics to Clinical Practice," The Eighth International Meeting of the Dysphagia Research Society, October 1999, Burlington, Vermont.
- Program Committee, The Seventh International Meeting of the Dysphagia Research Society, October 1998, New Orleans, Louisiana.
- Meeting Organizer (with Shiyi Chen and Gary Doolen), “Turbulence Transport and Numerical Modeling,” Center for Nonlinear Studies, Los Alamos National Laboratory, New Mexico, June 1997.
- Organizer of two “State-of-the-Art Symposia” entitled “Mechanical Aspects of Swallowing” and “Neurophysiology in Swallowing” at the Fifth International Meeting of the Dysphagia Research Society, Aspen, Colorado, Oct/November 1996, Aspen, Colorado.
- Meeting Cochairperson (with Barbara Sonies and JoAnne Robbins). The Fifth International Meeting of the Dysphagia Research Society, Oct/November 1996, Aspen, Colorado.
- Proceedings Chairman and Local Arrangements Committee, “10th Symposium on Turbulent Shear Flows,” Pennsylvania State University, University Park, PA, August 1995.
- Meeting organizer (with J.C. Vassilicos, J. Hunt, P. Flandrin) for “Multiscale Stochastic Processes Analyzed using Multifractals and Wavelets”, Cambridge University, England, March 1993.
- Program Committee, The Third International Meeting of the Dysphagia Research Society, October 1994, McLean, Virginia.
- Workshop co-Organizer, “Mechanical Analysis and Computer Simulation of Swallowing,” at the First International Meeting of the Dysphagia Research Society, Milwaukee, Wisconsin, November 1992.

Workshops/Panel Participation

- Kavli Institute for Theoretical Physics, Program on Planetary Boundary Layers in Atmospheres, Oceans, and Ice on Earth and Moons, University of California Santa Barbara, 23 April - 11 May, 2018.
- NREL Drivetrain Reliability Collaborative Workshop, 19-20 Feb 2018, National Renewable Energy Lab, Golden, CO
- NREL Drivetrain Reliability Collaborative Workshop, 21-22 Feb 2017, National Renewable Energy Lab, Golden, CO

- NREL Drivetrain Reliability Collaborative Workshop, 16-17 Feb 2016, National Renewable Energy Lab, Golden, CO
- DOE A2e Workshop on Wind Plant Physics and Modeling, Arlington, VA, Feb 2015.
- DOE A2e High Fidelity Modeling: ModSim Environment Strategic Planning Meeting. Denver, CO, Jan 2015.
- DOE A2e High Fidelity Modeling Working Group Meeting. NREL, Golden, CO, April 2014.
- DOE A2E High-Fidelity Modeling Working Group Workshop, 23 January 2013, Sandia National Laboratory, Albuquerque, NM.
- Invited address at Argonne National Lab, Workshop on Atmospheric Modeling at LES Scales, Sept 2013.
- DOE Wind Program Complex Flows Workshop, January 17-19th, 2012, Boulder, CO.
- NAWEA Scoping Workshop for a North America Wind Energy Academy (NAWEA), Nov. 17-18 2011, Boulder, CO.
- NSF Workshop on the Development of Fluid Mechanics Community Software and Data Resources March 22-23, 2010, University of Texas at Austin.
- NSF Workshop on Cyberscience Grand Challenges and Implications for Cyberinfrastructure, National Science Foundation, April 22-23, 2010.
- Invited Presenter, NSF Cyber-Fluid Dynamics Workshop, 19-20 July 2007
- Invited presenter: Symposium on the Longitudinal Muscles of the Gastrointestinal Tract, University of California San Diego, Feb 2007.
- TeraGrid Planning Workshop, Rosemont, Illinois, August 21-22, 2007
- Invited presenter, Workshop on new developments in subfilter-scale closures, NCAR, Boulder CO, Aug 2002.
- Invited presenter, Workshop on Methods for spatio-temporal analysis of gastrointestinal motor events, Madison, WI, Nov 2001.
- Invited participant, NSF Workshop on Undergraduate Education in Fluid Dynamics, Univ. of Michigan, Oct 2000.
- Invited presenter, Workshop on Large Eddy Simulation and Experiment, Chicago, IL,1999.
- Panel Member, The "Lorne Working Group on Pressure Wave Analysis," 16th International Symposium on Gastrointestinal Motility, Lorne Australia, February 1998.
- Invited presenter, Workshop on Turbulence Modeling and the Theory of Hydrodynamic Instabilities, Chexbres Switzerland, July 1996.
- Invited panel member/faculty, The 4th Dysphagia Research Society Meeting, McLean, Virginia, October 1995.
- Invited participant and presenter at the Nonlinear Sciences Workshop, Center for Nonlinear Studies, Los Alamos National Laboratory, Aug. 1995.
- Invited panel member/faculty at the 1st International Voice and Swallowing Symposium, Atlanta, GA, June 1995.
- Invited panel member/faculty at the 3rd Dysphagia Research Society Meeting, McLean, Virginia, October 1994.
- Invited participant and presenter at the Nonlinear Sciences Workshop, Center for Nonlinear Studies, Los Alamos National Laboratory, Aug. 1994.
- Invited participant and presenter at the Nonlinear Dynamics and Stochastic Processes Workshop, Center for Nonlinear Studies, Los Alamos National Laboratory, July 1993.
- Invited participant and presenter at the USA-French Workshop on Wavelets and Turbulence, Princeton University, Princeton, New Jersey, June 1991.
- Invited participant and session recorder for New Approaches to Experimental Turbulence Research Workshop, Princeton University, New Jersey, Sept. 1990.
- Invited participant at Boundary Layer Structure Workshop, NASA-Langley, Virginia, August, 1990.
- Invited participant and session recorder for 1989 Workshop entitled "Whither Turbulence? or Future Directions in Turbulence," Cornell University, New York. Proceedings by Springer-Verlag, 1990.
- Invited participant in 1989 Newport Workshop on Turbulence, Salve Regina College, Rhode Island.

REVIEWER/REFEREE FOR MANY JOURNALS, INCLUDING:

AIAA Journal
American Journal of Physiology
Annals of Biomedical Engineering
Arch. Phys. Med. Rehab.
ASME J. Biomechanical Engineering
Chemical Engineering Communications
Computers and Mathematics with Applications
Biorheology
Dysphagia
European Journal of Mechanics
Experiments in Fluids
Experimental Thermal and Fluid Science
Heat and Fluid Flow
Journal of Applied Mechanics
Journal of Atmospheric Sciences
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Neurogastroenterology and Motility
Physical Reviews E
Physical Review Letters
Physics of Fluids
NSF, NIH, ARO (proposal reviews)
Cambridge University Press (technical book reviews)
McGraw-Hill (textbook)