CURRICULUM VITAE

NAME

Fazle Hussain

CITIZENSHIP

USA (Naturalized 1977)

EDUCATION

Ph.D.	Stanford University	1969	Mech. Engineering
M.S.	Stanford University	1966	Mech. Engineering
B.S.	Bangladesh University of Engineering & Technology	1963	Mech. Engineering
Postdoctoral	American Mathematical Society Summer Institute (held at R.P.I.)	Summer 1970	Geophysical Fluid Dynamics

PROFESSIONAL EXPERIENCE

2013 – Professor, Dept. of Mechanical Engineering [also Adjunct Prof, Depts. of Physics (TTU), Chemical Engineering (TTU), Petroleum Engineering (TTU), Internal Medicine (TTUHSC), and Cell Physiology & Molecular Biophysics (TTUHSC)],

President's Distinguished Chair in Engineering & Science (2013-2018),

President's Endowed Distinguished Chair in Engineering, Science, & Medicine (2018 -)

Senior Adviser to the President, Texas Tech University (TTU)

2011 – Honorary Professor (for Life), Peking University, Beijing, China

2010 – CTR Senior Fellow, Stanford University

2010 – 13 Hugh R. & Lillie C. Cullen Distinguished University Chair, University of Houston (UH)

2010 – Adjunct Professor, Dept. of Mechanical Engineering, Rice University

2010 – Senior Member and Dean of Engineering, The Methodist Hospital Research Institute, Houston, TX

2009 – 11 Distinguished Adjunct Professor, Dept. of Nanomedicine & Biomedical Engineering, Univ. of Texas Health Sciences Center, Houston

2008 – 11 China Ministry of Education Distinguished Visiting Professor, College of Engineering, Peking University, Beijing, China

2008 – 09 Moore Distinguished Scholar, Caltech

2007 – 13 Professor, Physics Department, UH.

2007 – 13 Professor, Earth & Atmospheric Science Department, UH.

2004 –	Adjunct Prof, Bioengineering Department, Rice University.
1989 – 10	Hugh R. & Lillie C. Cullen Distinguished Professor, UH.
1985 – 89	Distinguished University Professor, UH.
1976 – 13	Professor, Mechanical Engineering Department, UH.
1973 – 76	Associate Professor, Mechanical Engineering Department, UH.
1971 – 73	Assistant Professor, Mechanical Engineering Department, UH.
1969 – 71	Post-doc Fellow, Department of Mechanics, Johns Hopkins University.
1965 – 69	Research Assistant, Stanford University.
1964 – 65	Lecturer, Department of Mechanical Engineering, Bangladesh University. [Research in: prediction, measurement and analysis of solar radiation; design and performance of an ammonia-water solar refrigerator; design, installation and testing of a rocket motor.]
1963 – 64	Mechanical Engineer, Ferrostaal A.G.(Pakistan) [Mechanical Design.]
1959 – 63	Design Engineer. Narayanganj Dock Ltd. [Design, profile drawings, and layout of various powered river crafts (up to 60 ft. length.)]

TEACHING

Undergraduate: Thermodynamics I, Thermodynamics II, Elementary Fluid Mechanics, Fluid Mechanics, ME Laboratory, Fluid Mechanics Laboratory, Thermal-Fluids Laboratory, Introduction to Mechanics (for non-MEs).

Graduate: Laminar Flow, Boundary Layer Theory, Hydrodynamic Stability, Viscous Flow Theory, Jet Flows and Jet Noise, Turbulent Shear Flow, Turbulence, Advanced Measurement Techniques in Fluid Mechanics, Vortex Dynamics, Viscous Flow Theory, Advanced Fluid Dynamics, and Introduction to Advanced Fluid Mechanics.

CONTINUING EDUCATION

NATO Advanced Study Institute on Cardiovascular Flow Dynamics, held at Houston, October 6-17, 1975.

NASA-Stanford Center for Turbulence Research, Summer Workshops: July 13-August 8, 1987; and June 25 - July 22, 1988.

ADMINISTRATIVE

Chairman, Houston Area Fluid Mechanics Seminar, jointly sponsored by Rice University and the University of Houston (organized by F. H.) 1971-1981.

Chairman, Kovasznay Distinguished Lecture Series, UH (1980-2003).

Director, Institute for Fluid Dynamics & Turbulence, UH (1981-2013).

Director, Vortex Technology Center, UH (1996-2002).

Chairman, Presidents' Distinguished Lecture Series in Engineering, Medicine & Science, Texas Tech University, (2013-).

SPECIAL HONORS FOR RESEARCH

Honors and Awards:

Eckhart Prize (for outstanding Ph.D. Dissertation), Stanford University, (awarded in 1971).

Senior Research Excellence Award, Cullen College of Engineering, UH, 1979.

US-India Exchange Scholar, jointly sponsored by the NSF (USA) and Council of Scientific and Industrial Research (India), December, 1980.

Guest Scholar, Chinese Academy of Sciences, Beijing, China, Oct. - Nov., 1983.

Freeman Scholar, Biennial Award of ASME, l984.

Research Excellence Award (*at Full Prof level***)**, UH, (First Recipient), 1985.

Keynote Lecture on Turbulence, The IUTAM Symposium on Fluid Mechanics in the Spirit of G. I. Taylor, (organized and chaired by G. K. Batchelor) Cambridge University, UK, March 24-28, 1986.

Trinity College Fellowship, Sabbatical at Cambridge University Department of Applied Mathematics and Theoretical Physics, Fall 1992.

Horizons Lecture, Kimberly-Clark, 1992.

Tani Memorial Lecture, 6th Asian Congress on Fluid Mechanics, Singapore, May, 1995.

Inducted into The Johns Hopkins Society of Scholars, JHU, Baltimore, MD. 1996.

Midwest Mechanics Lecturer (U Michigan, Michigan St U, Northwestern U, U Wisconsin, U Minnesota, U Notre Dame, IIT, U Illinois at Urbana-Champaign, Purdue U), 1997-98.

Elected to The World Academy of Sciences (TWAS), Trieste, Italy, 1997.

Fluid Dynamics Prize, The American Physical Society, 1998.

Sabbatical at Isaac Newton Institute of Mathematical Sciences, Cambridge University, Spring 1999.

Sigma Xi Award, University of Houston, 1999.

Visiting Scholar, Kavli Institute for Theoretical Physics, UCSB, Spring. 2000.

Fluids Engineering Award, ASME, 2000.

Elected to US National Academy of Engineering, 2001.

Cullimore Lecture, NJ Inst of Tech. April 15, 2002.

Fluid Dynamics Award, AIAA, 2002.

His student, Wade Schoppa, was awarded the 2002 Andreas Acrivos PhD Dissertation Award of the American Physical Society.

His student, Robert Armstrong, was awarded Best Honors Thesis Award by the UH Honors College, 2008.

Elected to Bangladesh Academy of Science, 2003.

Top Ten Asian-Americans, seven alive, in Shell's tribute to Asian-Americans of USA in Asian Heritage Month, May, 2003.

Bangladesh Society of Mechanical Engineers Gold Medal, 2003.

Institution of Engineers Bangladesh Medal (Awarded by the Bangladesh Prime Minister) 2004.

National Academy of Engineering: Mech. Engr. Peer Committee (2003-06), Mech. Engr. Executive Committee (Secretary, Vice-Chair, Chair, Past-Chair: 2006-2014) and Mech. Engr. Search Committee (2006)

O'Donnell Prize Committee, TAMEST, (2005-06).

2007 Annual Conference Organizing Committee, TAMEST.

Moderator of the Engineering Plenary Session at 2007 TAMEST Annual Conference, Austin, Jan. 3-4.,2007. The other two moderators: S. Weinberg (**Science**) and F. Murad (**Medicine**) - both Nobel Laureates.

Esther Farfel Award, the highest Faculty recognition at the University of Houston for "Excellence in Teaching, Research and University Service" (2007)

Opening Plenary Lecture, 5th International Conference on Nonlinear Mechanics, Shanghai, China, June 11-14 (2007).

Scholar of the Year, (first recipient) presented at the First Non Resident Bangladeshi Conference (by the Chief Advisor - head of the Bangladesh Interim Government), December 27-29, (2007) Dhaka, Bangladesh

Fluid Dynamics Sectional Lecture, 2008 IUTAM Congress, Adelaide, Australia

The Keynote Lecture, 12th Asian Congress of Fluid Mechanics, Daejon, S. Korea, 2008 (also presented keynote lectures three different times before in ACFM)

Ministry of Education Distinguished Visiting Professor, Peking University, College of Engineering, (2008-2011).

Moore Distinguished Scholar, Caltech, (2008-09).

TAMEST Board Director, The Academy of Medicine, Engineering & Science of Texas, (2009-2012).

Satish Dhawan Visiting Professor, Dept of Aerospace Engineering, Indian Institute of Science, Bangalore, India, (2009-).

Distinguished Scientists Panel (includes Nobel Laureates Bob Curl and Ferid Murad), First Global Congress on NanoEngineering for Medicine and Biology, NEMB2010, ASME, Feb 7-10, (2010).

CTR Senior Fellow, Stanford University (2010-)

Draper Prize Committee, NAE (2010-13)

His student, Eric Stout, was awarded Best Honors Thesis Award by the UH Honors College, 2010.

Opening Plenary Lecture, 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec 17-21, 2010.

New Horizons in Engineering Distinguished Lecture, Clarkson University, March 4 (2011)

NAE President Selection Committee (2012)

Dean's Distinguished Lecture, Texas A&M University at Qatar, Doha, Qatar, April 28, 2013.

Distinguished Lecture of Mechanical and Industrial Engineering, Northeastern University, November 13, 2015.

Dr. M.O. Ghani Memorial Lecture at Bangladesh Academy of Sciences, Bangladesh, Jan. 2, 2018.

Special Guest Lecture, BUET Grand (50th) Reunion, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, January 5 (2018).

FOBANA 2018 Award, Federation of Bangladeshi Associations in North America (FOBANA) Annual Convention, Atlanta, GA, July 29 (2018).

"Amazing Bangladeshi" Award, Daily Star-Crown Cement, Dhaka, Bangladesh, November 10 (2018).

Listings:

American Men and Women of Science, Who's Who in Engineering, Marquis Who's Who in the South and the Southwest, Men of Achievement (Cambridge, England), Who's Who in Texas, Dictionary of International Biography (London), Who's Who in Technology Today, International Who's Who in Engineering, Who's Who in Aviation and Aerospace, Who's Who in Frontier Science and Technology.

Other Honors

Fulbright Scholarship (Full Grant) 1965-66, Stanford U.

August Berner Honors Fellowship (in addition to Research Assistantship), 1966-67, Stanford U.

Senior Merit Scholarship of Pakistan Government, 1959-63.

Talent Scholarship of Pakistan Government, 1957-59.

Journal Editorships:

Editor, Technical Journal of the E. Pakistan University of Engineering, (1962).

Editor, Institute of Engineers, Pakistan; both of The Pakistan Engineer (monthly Journal) and the Proceedings of the Annual Meetings, (1963-65).

Assistant Editor, Turbulence in Liquids, (1975, 1977, 1979, 1981, 1983) Biennial Volumes, Science Press, Princeton.

Associate Editor, The Physics of Fluids, American Institute of Physics (1981-84).

Editorial Advisory Board, Experimental Thermal and Fluid Science (International Journal of Experimental Heat Transfer, Thermodynamics, and Fluid Mechanics), Elsevier Scientific Publishing, (1987-).

Editorial Advisory Board, Thermophysics and Aeromechanics, Russian Academy of Sciences, Novosibirsk, (1992-).

Associate Editor, Journal of Fluids Engineering, ASME (1995-98).

Board of Editors, Sadhana: Proceedings of Indian Acad. Sci. (Science & Engr.) (1996-1998).

Advisory Board, Journal of Turbulence, Taylor & Francis (2003-).

Some Review Panels/Scientific Committees:

Panelist, Presidential Faculty Fellows, NSF (1992).

Advisory Committee, Stanford-NASA Center for Turbulence Research, (1988-1991).

Advisory Committee, Institute of Computational Fluid Dynamics, Tokyo, (1988-2000).

Asian Fluid Mechanics Committee, (Organizes the Asian Congress of Fluid Mechanics every 2 years), Founding Member, (1979-).

Advisory Board, Third (1981), through Twelfth (1997), Symposia on Turbulent Shear Flows.

Organizing Committee, Biennial Symposia of Turbulence, U. of Missouri-Rolla, (1975-95).

Organizing Committee and International Advisory Committee, Beer-Sheva International Seminar on MHD and Turbulence, Jerusalem, Israel (1985-97).

Scientific Committee, IUTAM Symposium on Transport Phenomena, U. of Tokyo, (1987).

Scientific Committee, IUTAM Symposium on Topological Fluid Mechanics, Cambridge U, (1989).

Technical Committee on Turbulence, Am Soc Civil Engineers, (1987-91).

Organizing Committee, Research Trends in Chaotic Dynamics and Transports in Fluids and Plasmas, La Jolla International School of Physics, UC-San Diego, (1990).

Scientific Committee, IUTAM Symposium on Eddy Structure Identification in Free Turbulent Shear Flows, Poitiers, France, September 14-17, (1992).

Fluid Dynamics Prize Committee, American Physical Society, (1991-93), (2000).

Organizing Committee, W.C. Reynolds Symposium on Turbulence, Monterey, CA, March 22-23, (1993).

Physics Panel, International Science Foundation, Washington, D. C., (1993).

NASA Turbulence Peer Review Committee, (1994).

Organizing Committee, Anatol Roshko Symposium, Caltech, Nov. 18, (1995).

International Advisory Committee, International conference on Advances in Mechanical Engineering, Bangalore, India, Dec. 20-22, (1995).

Scientific Committee, IUTAM Symposium on Dynamics of Slender Vortices, Aachen, Germany, (1997).

Member, Fluid Dynamics Technical Committee, AIAA (1997-2001).

Scientific Committee, International Symposium in Mathematical Sciences in Memory of S. Chandrasekhar, Calcutta, India, Dec. (1997).

Technical Program Chair, 30th AIAA Fluid Dynamics Conference, Norfolk, VA, June (1999).

Advisory Committee, Complex Fluid Flow Program, State of Kansas (1998).

Nominating Committee, APS/DFD: Vice-chair (1997-98) ; Chair (1998-99).

Member, Committee on Naval Hydrodynamics and Hydroacoustics, National Research Council (1999-2000).

Chairman, Fluid Dynamics Award Committee, AIAA (1999, 2000).

Member (1996-98; 2008-10), Co-Chair (1998-02), Scientific Committee, U.S. National Congress of Theoretical and Applied Mechanics.

Otto Laporte Award Committee, APS, Vice-Chair (2001-02), Chair (2002-03).

Elected to 4-yr term (Vice-Chair 2000-01; Chair-Elect 2001-02; Chair 2002-03; Past-Chair 2003-04), Division of Fluid Dynamics, APS.

Advisory Committee, Keck Laboratory, New Jersey Inst of Technology (2000).

Member, AIAA Fellow Grade Selection Committee, (2001-03).

Member, NRC Associateship Award Committee, (2001-04).

TWAS Engineering Sciences Prize Committee, The World Academy of Sciences (TWAS), Trieste, Italy, Member (2003-07, 8-10), Chair (2010-13).

Member, Scientific Committee, IUTAM Symposium on Elementary Vortices and Coherent Structures, Kyoto, Japan, Oct 26-28 (2004).

Chair, Fellows Selection Committee, Aerospace Sciences, AIAA (2005).

Mechanical Engineering Peer Committee, US National Academy of Engineering (2004-2007).

1st O'Donnell Award Committee, The Academy of Medicine, Engineering, and Sciences of Texas (2005-06). Developed award criteria and procedure.

Executive Committee, Mech. Engr. Sec. of NAE (Secretary 2006-08, Vice- Chair 2008-10, Chair 2010-12, Past Chair 2012-2014).

Chair, Sustainable Energy Panel, NSF Workshop: Frontiers In Transport Research and Education: *Energy Systems, Biological Systems, Security, Information Technology and Nanotechnology*, U. Connecticut, May 17-18, (2007).

Committee on "An Independent Assessment of Nation's Wake Turbulence Research and Development Program", National Research Council (2007).

Scientific Committee, International Conference on advances in Mechanical Engr & Mechanics (ICAMEM), Tunisia (2008).

International Advisory Committee, Centennial Celebration in Aerospace Engineering at the Indian Institute of Science, Bangalore, May 18-22 (2009).

Scientific Committee, International Retreat on Vortex Aerodynamics, Peking University, August 21-23 (2009).

Honorary Chairman, 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, December 17-21 (2010).

Chairman, Engineering Sciences Prize Committee, The World Academy of Sciences, Trieste, Italy (2010-13).

Member, Charles Stark Draper Prize Committee, National Academy of Engineering (2011-2013).

Supervised:

Ph. D. Dissertations: 21

Carlos Thompson, Khairul Zaman, Ray Clark, Zaki Husain, Zaqir Hasan, Jin Tso, Hyder Husain, Catalina Stern, James Bridges, Joel Jenkinson, George Broze, Xiaoling Zhou, Davinder Virk, Hui Meng, Jinhee Jeong, Danghui Liu, Richard Yao (Co-advisor), Wade Schoppa, Prashant Haldipur, Dhoorjaty Pradeep, Satish Narayanan

MS. Theses: 28

Ray Clark, Dipak Bannerjee, Paramesh Banik, Paul Heinmiller, Zaqir Hasan, James Bridges, Alan Leitko, Mike Ross, Sunil Jain, Davinder Virk, C. F. Lee (co-advisor), Nick Albanis, Shashi Menon, Arindam Ghosh, Kye-Hong Park (co-advisor), Satish Narayanan, Wade Schoppa, Wu Wei, Chuang Zhou, Raja Kidambi, Seshadri Sreenivasan, Dhoorjaty Pradeep, Sayeda Sharmin Hussain, Farhan Qureshi, Madiha Ahmed, Eric Stout, Chris Bryson (co-advisor), Jie Yao

BSME Honors Theses: 12

Mike Ross, Ron Walling, Charlie Hasselbrink, Bill Berger, Rob Bradlaw, Carl Stoesz, Gustavo Posada, Andrew Glassel, Dale K. Jamison, Madiha Ahmed, Robert Armstrong, Eric Stout

Post-Doctoral Visitors: 39

V. Ramjee, Bob Antonia, Raju Vanguri, Moti Sokolov, Raja Menon, Jean-Claude Stettler, Dietrich Bechert, Joe Shlien, Peter Plaschko, M. Nallasamy, Yoshimori Kita, Ryuji Takaki, Promode Bandyopadhyay, Yoko Oshima, Michio Hayakawa, Shigeo Kida, Kuniaki Toyoda, Makoto Ichijo, Seiichi Iida, Amit Basu, Sergei Bardakhanov, Michael Goldshtik, Joseph Lai, Vladimir Shtern, Valery Zimin, Ramon Paralta-Fabi, Alexis Jirnov, M. Park, Alessandro Talamelli, Anatoly Borissov, Hyder Husain, Anne-Cecile Lesage, Souad Sennoune, Zeina Khan, Jensen Newman, Xi Chen, Julianna Santos, Duc Toan Cao, Ebrahim Hassan-Zadeh

Sigma Xi Research Excellence Award for Graduate Students:

M.A.Z. Hasan (81), H.S. Husain (83), J.E. Bridges (86), C. Stern (88), W. Schoppa (97).

CHAIRMANSHIP OF TECHNICAL MEETINGS

36th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, November 20-22, 1983, at University of Houston (co-chairmen: Hussain and Nerem).

International Symposium: Generation of Large-Scale Structures in Continuous Media, Perm-Moscow, USSR, June 11-20, 1990 (Vice-Chairman with U. Frisch).

30th Fluid Dynamics Conference, American Institute of Aeronautics & Astronautics, Norfolk, VA, June, 1999.

Co-Chairman of the Scientific Committee, US National Congress of Theoretical and Applied Mechanics, 2002.

MEMBERSHIPS

Elected Fellow of:

American Physical Society (1985).

American Society of Mechanical Engineers (1989).

American Institute of Aeronautics and Astronautics (2001).

Elected to:

The World Academy of Science, Trieste, Italy (1997)

The Academy of Medicine, Engineering & Science of Texas (2001)

PUBLICATIONS

BOOKS

Nonlinear Dynamics of Structures edited by R.Z. Sagdeev, U. Frisch, F. Hussain, S.S. Moiseev and N.S. Erokhin, World Scientific Co., 1991.

BOOK CHAPTERS

"Mechanics of Pulsatile Flows of Relevance to Cardiovascular System," in Cardiovascular Flow Dynamics and Measurements, (Eds. N.H.C. Hwang and N. Norman), University Park Press, Baltimore, pp. 541-632, (1976).

"New Aspects of Vortex Dynamics Relevant to Coherent Structures in Turbulent Flows," in Eddy Structure Identification (Ed. J.P. Bonnet) Springer, pp. 61-143, (1996).

"Genesis and Dynamics of Coherent Structures in Near-wall Turbulence: A New Look," in Self-Sustaining Mechanisms of Wall Turbulence (Ed. R. L. Panton) Computational Mechanics Publications, Southampton, p. 385, (1997).

"Injectable Multistage Nanovectors for Enhancing Imaging Contrast and Directed Therapy" in Nanostructure Science and Technology, with Biana Godin, Rita E. Serda, Xuewu Liu and Mauro Ferrari, Part 4, pp. 201-233, (2012).

ARCHIVAL PAPERS

(grouped by journals; note initials "A.K.M." dropped since 1987 to simplify)

Journal of Fluid Mechanics

1. Hussain, A.K.M.F. and Reynolds, W.C., "The Mechanics of an Organized Wave in Turbulent Shear Flow," J. Fluid Mech., **41**, pp. 241-258, (1970).
2. Hussain, A.K.M.F. and Reynolds, W.C., "The Mechanics of an Organized Wave in Turbulent Shear Flow. Part 2. Experimental Results," J. Fluid Mech., **54**, pp. 241-261, (1972).
3. Reynolds, W.C. and Hussain, A.K.M.F., "The Mechanics of an Organized Wave in Turbulent Shear Flow. Part 3. Theoretical Models and Comparison with Experiments," J. Fluid Mech., **54**, pp. 263-288, (1972).
4. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "The Free Shear Layer Tone Phenomenon and Probe Interference," J. Fluid Mech., **87**, pp. 349-383, (1978).
5. Sokolov, M., Hussain, A.K.M.F., Kleis, S.J., and Husain, Z.D., "A 'Turbulent Spot' in an Axisymmetric Free Shear Layer. Part 1," J. Fluid Mech., **98**, pp. 65-95, (1980).
6. Hussain, A.K.M.F., Kleis, S.J., and Sokolov, M., "A ' Turbulent Spot' in an Axisymmetric Free Shear Layer. Part 2," J. Fluid Mech., **98**, pp. 97-135, (1980).
7. Hussain, A.K.M.F. and Thompson, C.A., "Controlled Symmetric Perturbation of the Plane Jet: an Experimental Study in the Initial Region," J. Fluid Mech., **100**, pp. 397-431, (1980).
8. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Vortex Pairing in a Circular Jet Under Controlled Excitation. Part 1.General Jet Response," J. Fluid Mech., **101**, pp. 449-491, (1980).
9. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "Vortex Pairing in a Circular Jet Under Controlled Excitation. Part 2. Coherent Structure Dynamics," J. Fluid Mech., **101,** pp. 493-544, (1980).
10. Hussain, A.K.M.F. and Clark, A.R., "On the Coherent Structure of the Axisymmetric Mixing Layer: A Flow-visualization Study," J. Fluid Mech., **104**, pp. 263-294, (1981).
11. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Turbulence Suppression in Free Turbulent Shear Flows Under Controlled Excitation," J. Fluid Mech., **103**, pp. 133-160, (1981).
12. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "The 'Preferred Mode' of the Axisymmetric Jet," J. Fluid Mech., **110**, pp. 39-71, (1981).
13. Kleis, S.J., Hussain, A.K.M.F. and Sokolov, M., "A Turbulent Spot in an Axisymmetric Mixing Layer. Part 3: Azimuthal Structure and Initiation Mechanism," J. Fluid Mech., **111**, pp. 87-106, (1981).
14. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Taylor Hypothesis and Large-Scale Coherent Structures," J. Fluid Mech., **112**, pp. 379-396, (1981).
15. Antonia, R.A., Satyaprakash, B.R., and Hussain, A.K.M.F., "Statistics of the Fine-Scale Velocity in Turbulent Plane and Circular Jets,," J. Fluid Mech., **119**, pp. 55-89, (1982).

16. Hasan, M.A.Z. and Hussain, A.K.M.F., "The Self-Excited Axisymmetric Jet," J. Fluid Mech., **115**, pp. 59-89, (1982).
17. Hussain, A.K.M.F. and Hasan, M.A.Z., "The 'Whistler Nozzle' Phenomenon," J. Fluid Mech., **134**, pp. 431-458, (1983).
18. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Natural Large-Scale Structures in the Axisymmetric Mixing Layer," J. Fluid Mech., **138**, pp. 325-351, (1984).
19. Hussain, A.K.M.F. and Hasan, M.A.Z., "Turbulence Suppression in Free Turbulent Shear Flows Under Controlled Excitation. Part 2. Jet Noise Reduction," J. Fluid Mech., **150**, pp. 159-167, (1985).
20. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "An Experimental Study of Organized Motions in the Turbulent Plane Mixing Layer," J. Fluid Mech., **159**, pp. 85-104, (1985).
21. Stettler, J.C. and Hussain, A.K.M.F., "On Transition of Pulsatile Pipe Flow," J. Fluid Mech., **170**, pp. 169-194, (1986).
22. Hussain, A.K.M.F., "Coherent Structures and Turbulence," J. Fluid Mech., **173**, pp. 303-356, (1986).
23. Hussain, A.K.M.F. and Hayakawa, M., "Eduction of Large-Scale Organized Structures in a Turbulent Plane Wake," J. Fluid Mech., **180**, pp. 193-229, (1987).
24. Tso, J. and Hussain, F., "Organized Motions in a Fully Developed Turbulent Axisymmetric Jet," J. Fluid Mech., **203**, pp. 225-248, (1989).
25. Hayakawa, M. and Hussain, F., "Three Dimensionality of Organized Structures in a Plane Turbulent Wake," J. Fluid Mech., **206**, pp. 375-404, (1989).
26. Hussain, F. and Husain, H.S., "Elliptic Jets. Part 1. General Characteristics of Unexcited and Excited Jets," J. Fluid Mech., **208**, pp. 257-320, (1989).
27. Goldshtik, M., Hussain, F., and Shtern, V., "Symmetry Breaking in Vortex-Source and Jeffrey-Hamel Flows," J. Fluid Mech., **232**, pp. 521-565, (1991).
28. Kida, S., Takaoka, M., and Hussain, F., "Collision of Two Vortex Rings," J. Fluid Mech. **230**, pp. 583-646, (1991).
29. Husain, H.S. and Hussain, F., "Elliptic jets. Part 2. Dynamics of Coherent Structure Pairing," J. Fluid Mech., **233**, pp. 439-482, (1991).
30. Hunt, J.C.R. and Hussain, F., "A Note on Velocity, Vorticity and Helicity of Inviscid Fluid Elements," J. Fluid Mech., **229**, pp. 569-587, (1991).
31. Bridges, J.E. and Hussain, F., "Direct Application of Aerodynamic Noise Theory to Jet Flow," J. Fluid Mech., **240**, pp. 469-501, (1992).
32. Husain, H. S. and Hussain, F. "Elliptic Jets Part 3, Dynamics of Preferred Mode Coherent Structure," J. Fluid Mech. **248**, pp. 315-361, (1993).
33. Shtern, V. and Hussain, F. "Azimuthal Instability of Divergent Flows," J. Fluid Mech., **256**, pp. 535-560, (1993).
34. Virk, D. Melander, M., and Hussain, F. "Dynamics of a Polarized Vortex Ring," J. Fluid Mech., **260**, pp. 23-55, (1994).

35. Melander, M.V. and Hussain, F. "Topological Vortex Dynamics in Axisymmetric Viscous Flows," J. Fluid Mech., **260**, pp. 57-80, (1994).

36. Broze, G. and Hussain, F. "Non-Linear Dynamics of Forced Transitional Jets: Periodic and Chaotic Attractors," J. Fluid Mech., **263**, pp. 93-132, (1994).

37. Jeong, J. and Hussain, F. "On the Identification of a Vortex," J. Fluid Mech., **285**, pp. 69-94, (1995).

38. Schoppa, W., Hussain, F. and Metcalfe, R.W. "A New Mechanism of Small-Scale Transition in a Plane Mixing Layer: Core Dynamics of Spanwise Vortices," J. Fluid Mech., **298**, pp. 23-80, (1995).

39. Virk, D., Hussian, F., and Kerr, R.M. "Compressible Vortex Reconnection," J. Fluid Mech., **304**, pp. 47-86, (1995).

40. Husain, H. and Hussain, F. "Experiments on Subharmonic Resonance in a Shear Layer," J. Fluid Mech., **304**, pp. 343-372, (1995).

41. Shtern, V. and Hussain, F. "Hysteresis in Swirling Jets," J. Fluid Mech., **309**, pp. 1-44, (1996).

42. Broze, G. and Hussain, F. "Transition to Chaos in a Forced Jet: Intermittency, Tangent Bifurcations and Hysteresis," J. Fluid Mech., **311**, pp. 37-71, (1996).

43. Narayanan, S. and Hussain, F. "Measurements of Spatiotemporal Dynamics in a Forced Mixing Layer," J. Fluid Mech., **320,** pp. 71-115, (1996).

44. Jeong, J., Hussain, F., Schoppa, W., and Kim, J. "Coherent Structures Near the Wall of Turbulent Channel Flow," J. Fluid Mech., **332,** pp. 185-214, (1997).

45. Shtern, V. and Hussain, F. "Instabilities of conical flows causing steady bifurcations ," J. Fluid Mech., **366**, pp. 33-85, (1998).

46. Husain, H. S. and Hussain, F. "The Elliptic Whistler Jet," J. Fluid Mech., **397**, pp. 23-44, (1999).

47. Pradeep, D. S. and Hussain, F. "Core Dynamics of Strained Vortex: Instability and Transition," J. Fluid Mech., **447,** pp. 247-285, (2001).

48. Shtern, V. and Hussain, F. "Generation of Collimated Jets by a Point Source of Heat and Gravity," J. Fluid Mech., **449,** pp. 39-59, (2001).

49. Schoppa, W. and Hussain, F. "Coherent Structure Generation in Near Wall Turbulence," J. Fluid Mech. **453**, pp. 57-108, (2002).

50. Shtern, V. and Hussain, F. "Effect of Deceleration on Jet Instability," J. Fluid Mech., **480,** pp. 283-309, (2003).

51. Pradeep, D. S. and Hussain, F. "Effects of boundary condition in numerical simulations of vortex dynamics," J. Fluid Mech. **516**, pp. 115-124, (2004).

52. Pradeep, D.S. and Hussain, F. "Transient growth of perturbations in a vortex column," J. Fluid Mech., **550**, pp. 251-288, (2006).

53. Lee, C., Peng, H., Yuan, H., Wu, J., Zhou, M., and Hussain, F. "Experimental studies of surface waves inside a cylindrical container." J. Fluid Mech., **677**, pp. 39-62, (2011).

54. Hussain, F., Pradeep, D.S., and Stout, E. “Nonlinear transient growth in a vortex column,” J. Fluid Mech., **682**, pp. 304-331, (2011).

55. Kim, D., Hussain, F., and Gharib, M. “Vortex dynamics of clapping plates.” J. Fluid Mech., **714**, pp. 5-23, (2013).

56. Hussain, F. and Stout, E. “Self-limiting and regenerative dynamics of perturbation growth on a vortex column.” J. Fluid Mech, **718**, pp. 39-88, (2013).

57. Hickey, J.P., Hussain, F., and Wu, X. “Role of coherent structures in multiple self-similar states of turbulent planar wakes.” J. Fluid Mech. **731**, pp. 312-363, (2013).

58. Zhang, Y.S., Bi, W.T., Hussain, F., and She, Z.S. “A generalized Reynolds analogy for compressible wall-bounded turbulent flows.” J. Fluid Mech., **739**, pp. 392-420, (2014).

59. Chen, J., Hussain, F., Pei, J., and She, Z. S. "Velocity-vorticity correlation structure in turbulent channel flow." J. Fluid Mech., **742**, pp. 291-307, (2014).

60. Araya, G., Castillo, L., and Hussain, F. “The log behavior of the Reynolds shear stress in accelerating turbulent boundary layers.” J. Fluid Mech., **775**, pp. 189-200 (2015).

61. Stout, E., and Hussain, F. “External turbulence-induced axial flow and instability in a vortex” J. Fluid Mech., **793**, pp. 353-379, (2016).

62. Jarrahbashi, D., Sirignano, W. A., Popov, P. P., and Hussain, F. “Early spray development at high gas density: hole, ligament and bridge formations” J. Fluid Mech., **792**, pp. 186-231 (2016).

63. Hickey, J.P., Hussain, F., and Wu, X. “Compressibility effects on the structural evolution of transitional high-speed planar wake” J. Fluid Mech., **796**, pp. 5-39 (2016).

64. She, Z.S., Chen, X., and Hussain, F. “Quantifying wall turbulence via a symmetry approach: a Lie group theory” J. Fluid Mech., **827**, pp. 322-356 (2017).

65. Mao, X., and Hussain, F. “Optimal transient growth on a vortex ring and its transition via cascade of ringlets” J. Fluid Mech., **832**, pp. 269-286 (2017).

66. Zandian, A., Sirignano, W. A., and Hussain, F. “Understanding liquid-jet atomization cascades via vortex dynamics” J. Fluid Mech., **843**, pp. 293-354 (2018).

67. Chen, X., Hussain, F., She, Z.S. “Quantifying wall turbulence via a symmetry approach. Part 2. Reynolds stresses” J. Fluid Mech., **850**, pp. 401-438 (2018).

68. Yao, J. and Hussain, F. “Toward vortex identification based on local pressure-minimum criterion in compressible and variable density flows” J. Fluid Mech., **850**, pp. 5-17 (2018).

69. Zhong, Q., Hussain, F., and Fernando, H. “Quantification of turbulent mixing in colliding gravity currents” J. Fluid Mech., **851**, pp. 125-147 (2018).

70. Yao, J., Chen, X., and Hussain, F. “Drag control in wall-bounded turbulent flows via spanwise opposed wall-jet forcing.” J. Fluid Mech., **852**, pp. 678-709 (2018).

71. She, Z.S., Zou, H.Y., Xiao, M.J., Chen, X., and Hussain, F. "Prediction of compressible turbulent boundary layer via a symmetry-based length model." J. Fluid Mech., **857**, pp. 449-468 (2018).

72. Chen, X., Hussain, F., and She, Z.S. "Non-universal scaling transition of momentum cascade in wall turbulence." J. Fluid Mech., **871**, pp. R2-1 – R2-12 (2019).

73. Zandian, A., Sirignano, W., and Hussain, F. "Vorticity dynamics in a spatially developing liquid jet inside a co-flowing gas." J. Fluid Mech., **877**, pp. 429-470 (2019).

74. Yao, J. and Hussain, F. "Supersonic turbulent boundary layer drag control using spanwise wall oscillation." J. Fluid Mech., **880**, pp. 388-429 (2019).

75. Yao, J. and Hussain, F. "A physical model of turbulence cascade via vortex reconnection sequence and avalanche." J. Fluid Mech., (Accepted 2019).

Physics of Fluids

1. Hussain, A.K.M.F. and Clark, A.R. "Upstream Influence on the Near-Field of a Plane Turbulent Jet," Phys. Fluids, **20,** pp. 1416-1426, (1977).

2. Hussain, A.K.M.F. and Zedan, M.F, "Effects of the Initial Condition on the Axisymmetric Free Shear Layer: Effects of the Initial Momentum Thickness," Phys. Fluids, **21**, pp. 1100-1112, (1978).

3. Hussain, A.K.M.F. and Zedan, M.F., "Effects of the Initial Condition on the Axisymmetric Free Shear Layer: Effects of the Initial Fluctuation Level," Phys. Fluids, **21**, pp. 1475-1481, (1978).

4. Antonia, R.A., Satyaprakash, B.R., and Hussain, A.K.M.F., "Measurements of Dissipation Rate and Some Other Characteristics of Turbulent Plane and Circular Jets," Phys. Fluids, **23**, pp. 695-700, (1980).

5. Antonia, R.A., Chambers, A.J., and Hussain, A.K.M.F., "Errors in Simultaneous Measurements of Temperature and Velocity in the Outer Part of a Heated Jet," Phys. Fluids, **23**, pp. 871-874, (1980).

6. Hussain, A.K.M.F., "Coherent Structures - Reality and Myth," Phys. Fluids, **26**, pp. 2816-2850, (1983).

7. Husain, H.S. and Hussain, A.K.M.F., "Controlled Excitation of Elliptic Jets," Phys. Fluids, **26**, pp. 2763-2766, (1983).

8. Bandyopadhyay, P. and Hussain, A.K.M.F., "The Coupling between Scales in Shear Flows," Phys. Fluids, **27**, pp. 221-228, (1984).

9. Plaschko, P. and Hussain, A.K.M.F., "A Spectral Theory for Weakly Nonlinear Instabilities of Slowly Divergent Shear Flows," Phys. Fluids, **27**, pp. 1603-1606, (1984).

10. Takaki, R. and Hussain, A.K.M.F., "On the Dynamics of Entangled Vortex Filaments," Phys. Fluids, **27**, pp. 761-763, (1984).

11. Gad-el-Hak, M. and Hussain, A.K.M.F., "Coherent Structures in a Turbulent Boundary Layer. Part 1: Generation of Artificial Bursts," Phys. Fluids, **29**, pp. 2124-2139, (1986).

12. Ross, M.P. and Hussain, A.K.M.F., "Effects of Cylinder Length on Transition to Doubly Periodic Taylor-Couette Flow," Phys. Fluids, **30**, pp. 607-609, (1987).

13. Melander, M.V. and Hussain, F., "Crosslinking of Two Antiparallel Vortex Tubes," Phys. Fluids A, **1**, pp. 633-636, (1989).

14. Kida, S., Takaoka, M., and Hussain, F., "Reconnection of Two Vortex Rings," Phys. Fluids A, **1**, pp. 630-632, (1989).

15. Kida, S., Takaoka, M., and Hussain, F., "Formation of Head-Tail Structure in a Two-Dimensional Uniform Staining Flow," Phys. Fluids A, **3**, pp. 2688-97, (1991).

16. Kim, J. and Hussain, F. "Propagation Velocity of Perturbations in Turbulent Channel Flow," Phys. Fluids A **5**, pp. 695-706, (1993).

17. Shtern, V. and Hussain, F., "Hysteresis in a Swirling Jet as a Model Tornado," Phys. Fluids A **5,** pp. 2183-2195, (1993).

18. Melander, M.V. and Hussain, F., "Polarized Vorticity Dynamics on a Vortex Column," Phys. Fluids A, **5**, pp. 1992-2003, (1993).

19. Park, K.-H., Metcalfe, R.W., and Hussain, F. "Role of Coherent Structures in an Isothermally Reacting Mixing Layer," Phys. Fluids A, **6**, pp. 885-902, (1994).

20. Meng, H. and Hussain, F. "Instantaneous Flow Field in an Unstable Vortex Ring Measured by Holographic Particle Velocimetry," Phys. Fluids, **7**, pp. 9-11, (1995).

21. Zimin, V. and Hussain, F. "Wavelet Based Model for Small-Scale Turbulence," Phys. Fluids, **7**, pp. 2529-2532, (1995).

22. Goldshtik, M. and Hussain, F. "The Nature of Inviscid Vortex Breakdown, "Phys. Fluids, **9**, 2, pp. 263-265, (1997).

23. Shtern, V., Borissov, A., and Hussain, F. "Vortex Sinks with Axial Flow: Solution and Applications," Phys. Fluids, **9**, 10, pp. 2941–2959, (1997).

24. Schoppa, W. and Hussain, F. "A large scale control strategy for drag reduction in turbulent boundary layers ," Phys. Fluids, **10**, 5, pp. 1049-1051, (1998).

25. Shtern, V., Hussain, F., and Herrada, M. "New Features of Swirling Jets," Phys. Fluids, **12**, 11, pp. 2868-2877, (2000).

26. Shtern, V., Zimin, V., and Hussain, F. "Analysis of centrifugal convection in rotating pipes," Phys. Fluids, **13**, pp. 2296-2308, (2001).

27. Husain, H. S., Shtern, V., and Hussain, F. "Control of Vortex Breakdown by Addition of Near-Axis Swirl," Phys. Fluids **15**(2), pp. 271-279, (2003).

28. Hussain, F. and Duraisamy, K. "Mechanics of viscous vortex reconnection," Phys. Fluids **23**, 2, pp. 021701-021701-4, (2010).

29. van Rees, W.M., Hussain, F., and Koumoutsakos, P. "Vortex tube reconnection at Re=10^4" Phys. Fluids **24**, 7, pp. 075105-1 – 075105-14, (2012).

30. Ni, Q., Hussain, F., Wang, J., and Chen, S. "Analysis of Reynolds number scaling for viscous vortex reconnection" Phys. Fluids **24**, 10 pp. 105102-1–105102-12, (2012).
31. Castillo, L. and Hussain, F. "The logarithmic and power law behaviors of the accelerating, turbulent thermal boundary layer." Phys. Fluids **29**, 2, pp. 020718-1 – 020718-7 (2017).
32. Zandian, A., Sirignano, W.A., Hussain, F. "Planar liquid jet: Early deformation and atomization cascades." Phys. Fluids **29**, 6, pp. 062109-1 – 062109-19 (2017).
33. Yao, J., Chen, X., Hussain, F. "Reynolds number effect on drag control via spanwise wall oscillation in turbulent channel flows." Phys. Fluids **31**, pp. 085108-1 – 085108-16 (2019).

Annual Review of Fluid Mechanics

1. Shtern, V. and Hussain, F. "Collapse, Symmetry Breaking and Hysteresis in Swirling Flows," Ann. Rev. Fluid Mech., **31**, pp. 537-566, (1999).

Theoretical and Computational Fluid Dynamics

1. Virk, D. and Hussain, F., "Influence of Initial Conditions on Compressible Vortex Dynamics," Theor. Comput. Fl. Dyn. **5**, pp. 309-334, (1993).
2. Pradeep, D.S. and Hussain, F. "Vortex Dynamics of Turbulence-Coherent Structure Interaction," Theor. Comput. Fl. Dyn. **24,** pp. 265-282, (2010).

Nature

1. Goldshtik, M., Husain, H. S., and Hussain, F., "Loss of Homogeneity in a Suspension by Kinematic Action," Nature, **357**, pp. 141-142, (1992).

Physical Reviews

1. Berdichevsky, V. Kunin, I., and Hussain, F., "On Negative Temperature of Vortex Motion," Phys. Rev. A, **43**, pp. 2050-2151, (1991).
2. Berdichevsky, V., Kunin, I., and Hussain, F., "Reply to Comment on 'Negative Temperature of Vortex Motion,'" Phys. Rev. A, **44**, pp. 8439-8440, (1991).
3. Goldshtik, M., Husain, H.S., and Hussain, F. "Kinematic Separation of Mixtures," Phys. Rev. A, **45**, pp. 8611-8616, (1992).
4. Berdichevsky, V., Kunin, I., and Hussain, F. "Reply to 'Comments on Negative Temperature of Vortex Motion,'" Phys. Rev. E, **47**, pp. 2968-2969, (1993).
5. Melander, M. V. and Hussain, F. "Coupling Between a Coherent Structure and Fine-Scale Turbulence," Phys. Rev. E., **48**, pp. 2669-2689, (1993).
6. Shtern, V., Goldshtik, M., and Hussain, F. "Generation of Swirl Due to Symmetry Breaking," Phys. Rev. E. **49**, pp. 2881-2886, (1994).
7. Goldshtik, M. and Hussain, F. "Structural Approach to the Modeling of a Turbulent Mixing Layer," Phys. Rev. E., **52** pp. 2259-2568, (1995).
8. Husain, H., Hussain, F., and Goldshtik, M. "Anomalous separation of Homogeneous Particle-Fluid Mixtures: Further Observations," Phys. Rev. E., **52**, pp. 4909-4923, (1995).

9. Broze, G., Narayanan, S., and Hussain, F. "Measuring Spatial Coupling in Inhomogeneous Dynamical Systems," Phys. Rev. E., **55**, 4, pp. 4179-4186, (1997).
10. Shi, F., Sharma, P., Kouri, D. J., Hussain, F., and Gunaratne, G.H., "Nanostructures with long-range order in monolayer self-assembly," Phys. Rev. E, **78,** pp**.** 025203-1-4, (2008).
11. Chen, X., Wei, B. B., Hussain, F., and She, Z. S. "Anomalous dissipation and kinetic-energy distribution in pipes at very high Reynolds numbers", Phys. Rev. E, **93**, p. 011102, (2016).

Physical Review Letters

1. Shtern, V. and Hussain, F. "Onset of Convection near a Point Source of Heat and Gravity," Phys. Rev. Lett. **87**, p. 264301-1-4, (2001).
2. Zhang, Y. S., Bi, W.T., Hussain, F., Li, X.L., and She, Z.S. "Mach-Number-Invariant Mean-Velocity Profile of Compressible Turbulent Boundary Layers," Phys. Rev. Lett. **109**, 5, pp. 054502-1–054502-4, (2012).

Physical Review Fluids

1. Chen, X., and Hussain, F. "Similarity transformation for equilibrium boundary layers, including effects of blowing and suction," Phys. Rev. Flds., **2** (3), pp. 034605 (2017).
2. Yao, J., Chen, X., Thomas, F., and Hussain, F. "Large-scale control strategy for drag reduction in turbulent channel flows" Phys. Rev. Flds., **2** (6), pp. 06201 (2017).
3. Jarrahbashi, D., Sirignano, W. A., Popov, P. P., and Hussain, F. "Numerical simulation of liquid round jet atomization" Phys. Rev. Flds., **2** (9), pp. 090504 (2017).

Physica D

1. Kerr, R.M. and Hussain, F., "Simulation of Vortex Reconnection," Physica D, **37**, pp. 474-484, (1989).
2. Stern, C. and Hussain, F. "Chaos in Counter-Rotating Couette Flow," Physica D, **72**, pp. 195-210, (1994).

Journal of Turbulence

1. Chen, X., Hussain, F., She, Z.S. "Predictions of Canonical Wall-Bounded Turbulent Flows Via a Modified k-ω Equation," J. of Turb., **18**(1), pp. 1-35 (2017).
2. Wu, B., Bi, W., Hussain, F., She, Z.S., "On the Invariant Mean Velocity Profile for Compressible Turbulent Boundary Layers," J. of Turb., **18**(2), pp. 186-202 (2017).

International Journal of Multiphase Flow

1. Zandian, A., Sirignano, W., and Hussain, F. "Length-scale cascade and spread rate of atomizing planar liquid jets." Int. J. of Multiphase Flow, **113**, pp. 117-141 (2019).

Advanced Materials

1. Duggal, R., Hussain, F., and Pasquali, M., "Self-assembly of single-walled carbon nanotubes into a sheet by drop drying," Advanced Materials, **18**(1), pp. 29-34, (2006).

Journal of the Mechanics and Physics of Solids

1. Hu, S., Nathan, G., Hussain, F., Kouri, D.J., Sharma, P., and Gunaratne, G.H., "On stability of self-assembled nanoscale patterns," J. of the Mechanics and Physics of Solids, **18**, pp. 1357-84, (2007).
2. Duc Cao, T., Hussain, F., and Schrefler, B., "Porous media fracturing dynamics: stepwise crack advancement and fluid pressure oscillations," J. of the Mechanics and Physics of Solids, **111**, pp. 113-133 (2018).

Mechanics Research Communications

1. Cao, T. D., Milanese, E., Remij, E., Rizzato, P., Remmers, J., Simoni, L., Huyghe, J., Hussain, F., Schrefler, B. "Interaction between crack tip advancement and fluid flow in fracturing saturated porous media," Mech. Res. Commun., **80**, pp. 24-37 (2017)

Optics Letters

1. Zimin, V., Meng, H., and Hussain, F. "Innovative Holographic Particle Velocimeter: Multibeam Technique," Opt. Lett., **18**, pp. 1101-1103, (1993).
2. Zimin, V. and Hussain, F. "High Aperture Raster Holography for Particle Imaging," Opt. Lett., **19**, pp. 1158-1160, (1994).
3. Liu, D. and Hussain, F. "Off-Axis Holographic Technique for Particle Image Velocimetry Using a Fourier Transform lens," Opt. Lett., **20**, pp. 327-330, (1995).
4. Zimin, V. and Hussain, F. "Visibility of Individual Particles Inside a Dense Particle Ensemble," Opt. Lett., **20**, 9, pp. 967-969, (1995).
5. Liu, F. and Hussain, F. "Holographic Particle Velocimeter using Forward Scattering with Filtering," Opt. Lett., **23**, 2, pp. 132-134 (1998).

Applied Optics

1. Meng, H. and Hussain, F. "IROV (In-Line Recording and Off-Axis Viewing) Technique for Holographic Particle Velocimetry," Appl. Opt., **34**, pp. 1827-1840, (1995).

Journal of Optical Society of America

1. Meng, H., Anderson, W. Hussain, F., and Lui, D. "In-line Holography of Particle Fields: Intrinsic Speckle Limitaitons and Signal-to-Noise Ratio," J. Opt. Soc. Am., **10**, pp. 2046-2058, (1993).

Electronics Letters

1. Zhou, C., Mavrofrides, D., and Hussain, F. "Fast Method of Correlation Measurement of Planar Particle Fields," Electron. Lett., **31**, pp. 1731-1732, (1995).

New Journal of Physics

1. She, Z.S., Wu, Y., Chen, X., and Hussain, F. "A multi-state description of roughness effects in turbulent pipe flow" New J. of Phys., **14**, p. 093054, (2012).

2. Sciumè, G.; Shelton, S.; Gray, W.G.; Miller, C.T.; Hussain, F.; Ferrari, M.; Decuzzi, P.; Schrefler, B.A. "A multiphase model for three-dimensional tumor growth," New J. of Phys., **15,** p. 015005, (2013).

Journal of Computational Physics

1. Ziemys, A., Kojic, M., Milosevic, M.; Kojic, N., Hussain, F., Ferrari, M., and Grattoni, A. "Hierarchical modeling of diffusive transport through nanochannels by coupling molecular dynamics with finite element method," J. of Comp. Phys., **230**, 14, pp. 5722-5731, (2011).
2. Hou, T.Y., Hu, X., and Hussain, F. "Multiscale modeling of incompressible turbulent flows." J. of Comp. Phys., **232**, pp. 383-396, (2012).

Journal of Mathematical Physics

1. Yao, J., Lesage, A.C., Bodmannm, B., Hussain, F., and Kouri, D. J. "Inverse Scattering Theory: Inverse Scattering Series Method for One Dimensional Non-Compact Support Potential" J. of Math. Phys., **55**, 12, p. 123512, (2014).

ACS Nano

1. Grattoni, A., Fine, D., Zabre, E., Ziemys, A., Gill, J., Mackeyev, Y., Cheney, M.A., Danila, D.C., Hosali, S., Wilson, L.J., Hussain, F., and Ferrari, M. "Gated and Near-Surface Diffusion of Charged Fullerenes in Nanochannels," ACS Nano, **5**, 12, pp. 9382-9391, (2011).

Journal of the Royal Society Interface

1. Biasetti, J., Hussain, F., and Gasser, T.C. "Blood flow and coherent vortices in the normal and aneurysmatic aortas: a fluid dynamical approach to intraluminal thrombus formation," J. of the Roy. Soc. Int., **8**, 63, pp. 1449-1461, (2011).

Analytical Chemistry

1. Grattoni, A., Gill, J., Zabre, E., Fine, D., Hussain, F., and Ferrari, M. "Device for Rapid and Agile Measurement of Diffusivity in Micro- and Nanochannels," Analytical Chemistry, **83**, 8, pp. 3096-3103, (2011).

Lab on a Chip

1. Fine, D., Grattoni, A., Zabre, E., Hussain, F., Ferrari, M., and Liu, X. "A low-voltage electrokinetic nanochannel drug delivery system," Lab on a Chip, **11**, pp. 2526-2534, (2011).

Journal of Controlled Release

1. van de Ven, A., Kim, P., O'Hara, H., Fakhoury, J., Guilia, A., Schmulen, J., Moloney, P., Hussain, F., Ferrari, M., Liu, X., Yun, S., and Decuzzi, P. "Rapid tumoritropic accumulation of systemically injected plateloid particles and their biodistribution," J. of Cont. Rel., **158**, pp. 148-155, (2012).

Acta Mechanica Sinica

1. She, Z.S., Chen, X., Wu, Y., and Hussain, F. "New Perspective in statistical modeling of wall-bounded turbulence," Acta Mechanica Sinica, **26**, 6, pp. 847-861, (2010).

Science China Physics, Mechanics & Astronomy

1. You, W., Xi, C., She, Z.S., and Hussain, F. "Incorporating boundary constraints to predict mean velocities in turbulent channel flow." Science China Physics, Mechanics and Astronomy, 55 pp. 1-5, (2012).
2. Pei, J., Chen, J., Hussain, F., and She, Z. "New scaling for compressible wall turbulence," Science China Physics, Mechanics and Astronomy, **56**, pp. 1170-1181 (2013).

Europhysics letters

1. Chen, X., Hussain, F., and She, Z.S., "Bulk Flow Scaling for Turbulent Channel and Pipe Flows," Europhysics Lett., **115**(3), pp. 34001 (2016).

Biomaterials

1. Adriani, G., de Tullio, M. D., Ferrari, M.; Hussain, F., Pascazio, G., Liu, X., and Decuzzi, P. "The preferential targeting of the diseased microvasculature by disk-like particles." Biomaterials, **33**, 22, pp. 5504-5513, (2012).

MCB: Molecular & Cellular Biomechanics

1. Sciumè, G., Shelton, S.E., Gray, W.G., Miller, C.T., Hussain, F., Ferrari, M., and Decuzzi, P., Schrefler, B.A. "Tumor Growth Modeling from the Perspective of Multiphase Porous Media Mechanics" MCB: Molecular & Cellular Biomechanics, **9**, 3, pp. 193–212, (2012).

Convergent Science Physical Oncology

1. Khan, Z., Kamyabi, N., Hussain, F., Vanapalli, S. "Passage Times and Friction due to Flow of Confined Cancer Cells, Drops and Deformable Particles in a Microfluidic Channel." Convergent Science Physical Oncology, **3**(2) pp. 024001 (2017)

Journal of Chemical & Engineering Data

1. Nguyen, N. H., Hussain, F., and Chen, C. "Correlations for Densities of Aqueous Electrolyte Solutions", Journal of Chemical & Engineering Data, pp. 740-747, (2016).

Langmuir

1. Hassan-Zadeh, E., Hussain, F., Huang, J. "Gramicidin Peptides Alter Global Lipid Compositions And Bilayer Thicknesses Of Coexisting Liquid-Ordered And Liquid-Disordered Membrane Domains." Langmuir, **2017**, *33*, 13, pp. 3324-3332 (2017)

Nanomedicine

1. Hossain, S., Zhang, Y., Liang, X., Hussain, F., Ferrari, M., Hughes, T., and Decuzzi, P. "*in silico* Vascular Modeling for Personalized Nanoparticle Delivery" Nanomedicine, **8**, 3, pp. 343-357, (2013).

Computer Methods in Biomechanics and Biomedical Engineering

1. Singh, J., Hussain, F., and Decuzzi, P. "Role of Differential Adhesion in Cell Cluster Evolution: From Vasculogenesis to Cancer Metastasis." Com. Mthds. in Biomech. and Biomed. Engr., **18**, 3, pp. 282-292, (2015).

Mechanical EngineeringJournal

1. Grattoni, A., Parazynski, S., and Hussain, F. “Building Nanoglands.” Mech. Engr, **133**, 2, pp. 22-26, (2011).

Applied Mechanics Review

1. Wallace, J.M. and Hussain, F., "Coherent Structures in Turbulent Shear Flows," Appl. Mech. Rev., **43**, pp. s203-s209, (1990).

Proceedings of the Royal Society of London

1. Kunin, I. A., Hussain, F., Zhou, X., and Prishpionek, S. J. "Centroidal Frames in Dynamical Systems. I. Point Vortices," Proc. Roy. Soc. London A, **439**, pp. 441-463, (1992).

Geophysics

1. Lesage, A. C., Yao, J., Hussain, F., and Kouri, D. J., “Low Frequency Reflection Data Augmentation by an Inpainting Method: 1D Acoustic Media,” Geophysics, **80**, 4, pp. R139-R153, (2015).
2. Yao, J., Zhu, T., Hussain, F., and Kouri, D. J., “Locally Solving Fractional Laplacian Viscoacoustic Wave Equation Using Hermite Distributed Approximating Function,” Geophysics, **82**, 2, pp. T58-T67, (2016)

Current Science

1. Schoppa, W. and Hussain, F. “Generation of Near-Wall Coherent Structures in a Turbulent Boundary Layer,” Current Science, **79**, pp. 849-858, (2000).

AIAA Journal

1. Husain, Z.D. and Hussain, A.K.M.F., "The Axisymmetric Mixing Layer: Influence of the Initial and Boundary Conditions," AIAA Journal, **17**, pp. 48-55, (1979).
2. Hussain, A.K.M.F. and Husain, Z.D., "The Turbulence Structure in the Axisymmetric Mixing Layer," AIAA Journal, **18**, pp. 1462-1469, (1980).
3. Hussain, A.K.M.F. and Clark, A.R., "Measurement of Wavenumber-celerity Spectrum in Plane and Axisymmetric Jets," AIAA Journal, **19**, pp. 51-55, (1981).
4. Sokolov, M., Kleis, S.J., and Hussain, A.K.M.F., "The Coherent Structure Induced by Two Simultaneous Sparks in the Near Field of an Axisymmetric Jet," AIAA Journal, **19**, pp. 1000-1098, (1981).
5. Husain, Z.D. and Hussain, A.K.M.F., "Natural Instability of Free Shear Layers," AIAA Journal, **21**, pp. 1512-1517, (1983).
6. Hasan, M.A.Z., Islam, O., and Hussain, A.K.M.F., "Jet Noise Modification by the 'Whistler Nozzle,' " AIAA Journal, **22**, pp. 340-347, (1984).
7. Bandyopadhyay, P. and Hussain, A.K.M.F., "On the Universal Nature of Zero-Crossing Time and Velocity Scales in Turbulent Shear Flows," AIAA Journal, **23**, pp. 161-162, (1985).
8. Borissov, A., Shtern, V., and Hussain, F. “Modeling Flow and Heat Transfer in Vortex Burners,” AIAA Journal, **36**, pp. 1665-1670, (1998).

Journal of Fluids Engineering

1. Hussain, A.K.M.F. and Reynolds, W.C., "Measurements in a Full-Developed Turbulent Channel Flow," J. Fluids Engr., **97**, pp. 568-580, (1975).
2. Hussain, A.K.M.F. and Ramjee, V., "Effects of the Axisymmetric Contraction Shape on Incompressible Turbulent Flow," J. Fluids Engr., **98**, pp. 58-69, (1976).
3. Ramjee, V. and Hussain, A.K.M.F., "Influence of the Axisymmetric Contraction Ratio on Free-Stream Turbulence," J. Fluids Engr., **98**, pp. 506-515, (1976).
4. Hussain, A.K.M.F. and Reynolds, W.C., "Modified Tietjens Function for Asymptotic Analysis of Shear Flow Instability," J. Fluids Engr., **99**, pp. 256-258, (1977).
5. Tso, J., Kovasznay, L.S.G. and Hussain, A.K.M.F., "Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet," J. Fluids Engr., **103**, pp. 503-508, (1981).
6. Nallasamy, M. and Hussain, A.K.M.F., "Effects of Excitation on Turbulence Levels in a Shear Layer," J. Fluids Engr., **111**, pp. 102-104, (1989).

Journal of Sound & Vibration

1. Bridges, J.E. and Hussain, A.K.M.F., "Roles of Initial Condition and Vortex Pairing in Jet Noise," J. Sound Vib., **117**, pp. 289-312, (1987).
2. Bridges, J. and Hussain, F. "Effects of Nozzle Body on Jet Noise," J. Sound Vib., **188** (3), pp. 407-418, (1995).

Journal of Acoustic Society of America

1. Hasan, M.A.Z. and Hussain, A.K.M.F., "A Formula for Resonance Frequencies of A Whistler Nozzle," J. Acous. Soc. Amer., **65**, pp. 1140-42, (1979).

Fluid Dynamics Research

1. Takaki, R. and Hussain, A.K.M.F., "Singular Interaction of Vortex Filaments," Fluid Dyn. Res., **3**, pp. 251-256, (1988).
2. Oshima, Y., Izutsu, N., Oshima, K., and Hussain, A.K.M.F., "Bifurcation of an Elliptic Vortex Ring," Fluid Dyn. Res., **3**, pp. 133-139, (1988).
3. Hussain, F., Kambe, T., Kuwahara, K., and Orszag, S, "Challenges in Turbulence Research," Fluid Dyn. Res., **7,** pp. 51-63, (1991).
4. Meng, H. and Hussain, F. "Holographic Particle Velocimetry: A 3D Measurement Technique for Vortex Interactions, Coherent Structures and Turbulence," Fluid Dyn. Res., **8**, pp. 32-52, (1991).
5. Melander, M. V. and Hussain, F. "Core Dynamics on a Vortex Column," Fluid Dyn. Res. **13**, pp. 1-38, (1994).
6. Goldshtik, M. and Hussain, F. “Analysis of inviscid Vortex Breakdown in a Semi-Infinite Pipe,” Fluid Dyn. Res., **23(4)**, pp. 189-234, (1998).
7. Goldshtik, M. & Hussain, F. “Inviscid Separation in Steady Planar Flows,” Fluid Dyn. Res., **23**, **4,** pp. 235-266, (1998).
8. Schoppa, W. and Hussain, F. “Coherent Structure Dynamics in Near-Wall Turbulence,” Fluid Dyn. Res., **26**, pp. 119-139, (2000).

Journal of Biomechanics

1. Hwang, N.H.C. and Hussain, A.K.M.F., "Turbulent Flow Through a Natural Human Mitral Valve," J. Biomech., **10**, pp. 59-67, (1977).

International Journal of Engineering Science

1. Kunin, I., Hussain, F., Zhou, X., and Kovich, D., "Dynamics of Point Vortices in a Special Rotating Frame," Int. J. Engr. Sci., **28**, pp. 965-970, (1990).
2. Kunin, I. A., Hussain, F. and Zhou, X., "Stability of the 4-Vortex System," Int. J. Engr. Sci., **30**, pp. 1233-1236, (1992).
3. Kunin, I.A., Hussain, F., and Zhou, X. "Dynamics of a Pair of Vortices in a Rectangle," Int. J. Engr. Sci., **32**, pp. 1835-1844, (1994).

International Journal of Heat and Fluid Flow

1. Shadloo, M.S., Hadjadj, A. and Hussain, F. "Statistical behavior of supersonic turbulent boundary layers with heat transfer at $M_\infty = 2$," International Journal of Heat and Fluid Flow, **53**, pp. 113-134, (2015).

Heat Transfer Engineering

1. Shadloo, M.S., Hadjadj, A., and Hussain, F. "Temperature-Invariant Scaling for Compressible Turbulent Boundary Layers with Wall Heat Transfer," Heat Transfer Engineering, **39**, 11, pp. 923-932, (2018).

European Journal of Mechanics A

1. Peruzzo, C., Cao, D. T., Milanese, E., Favia, P., Pesavento, F., Hussain, F., Schrefler, B.A. "Dynamics of fracturing saturated porous media and self-organization of rupture," Euro. J. of Mech. A/Solids, **74**, pp. 471 - 484 (2019).

European Journal of Mechanics B

1. Grinstein, F. F., Hussain, F., and Oran, E. S., "Vortex Ring Dynamics in a Transitional Subsonic Free Jet. A Numerical Study," Eur. J. Mech. B/Fluids, **9**, **(6)**, pp. 499-525, (1990).
2. Stern, C., Chossat, P. and Hussain, F. "Azimuthal Mode Interaction in Counter-rotating Taylor-Couette Flow," Eur. J. Mech. B/Fluids, **9**, pp. 93-106, (1990).
3. Grinstein, F.F., Hussain, F., and Oran, E.S. "The Complementary Roles of Experiments and Simulation in Coherent Structure Studies," Eur. J. Mech. B/Fluids, **9**, pp. 499-525, (1990).
4. Schlatter, P., Li, Q., Orlu, R., Hussain, F., and Henningson, D.S. "On the near-wall vortical structures at moderate Reynolds numbers." Eur. J. Mech. B/Fluids, **48**, pp. 75-93, (2014).

Journal of Micromechanics and Microengineering

1. Grattoni, A., Rosa, E., Ferrati, S., Wang, Z., Giannesi, A., Liu, X., Hussain, F., Goodall, R., and Ferrari, M. "Analysis of a Nanomechanical Membrane Structure through Convective Gas Flow," J. Micromech. Microeng. **19,** pp. 1-11, (2009).

The Journal of Physical Chemistry

1. Arturas, Z., Grattoni, A., Daniel, F., Hussain, F., and Ferrari, M. "Confinement Effects on Monosaccharides Transport in Nanochannels," J. Phys. Chem. B, **114(34)**, pp. 11117-11126, (2010).

Biochimica et Biophysica Acta

1. Mohammad, A., Hussain, F., and Huang, J. "Alteration of Lipid Membrane Structure and Dynamics by Diacylglycerols with Unsaturated Chains," Biochimica et Biophysica Acta (BBA), pp. 253-263, (2016).

Annals of Biomedical Engineering

1. Pahlevan, N., Amlani, F., Gorji, M. H., Hussain, F., and Gharib, M. "A Physiologically Relevant, Simple Outflow Boundary Model for Truncated Vasculature," Annals Bio. Engr., **39**, 5, pp. 1470-1481, (2011).

Physica Scripta

1. Wu, Y., Chen, X., She, Z.S., and Hussain, F. "On the Karman constant in turbulent channel flow." Physica Scripta, **2013**, T155, pp. 014009-1–014009-4, (2013).

Science China: Physics, Mechanics and Astronomy

1. Pei, J., Chen, J., Hussain, F. and She, Z.S. "New scaling for compressible wall turbulence." Science China: Physics Mechanics and Astronomy, **56**, 9, pp. 1770-1781, (2013).

Chaos

1. Narayanan, S., Gunaratne, G. and Hussain, F. "A dynamical systems approach to the control of chaotic dynamics in a spatiotemporal jet flow." Chaos, **23**, 3, pp. 033133-1–033133-11, (2013).

Journal of Nanoparticle Research

1. Mahadevan, T.S., Milosevic, M., Kojic, M., Hussain, F., Kojic, N., Serda, R., Ferrari, M., and Ziemys, A. "Diffusion transport of nanoparticles at nanochannel boundaries." J. of Nanoparticle Res., **15**, pp. 1477-1–1477-9, (2013).

Computational Mechanics

1. Sciumè, G., Gray, W.G., Hussain, F., Ferrari, M., Decuzzi, P., and Schrefler, B.A. "Three phase flow dynamics in tumor growth." Comp. Mech., pp. 465-484, (2014).

Inverse Problems

1. Yao, J., Lesage, A.C., Bodmann, B., Hussain, F., and Kouri, D. "One dimensional acoustic direct nonlinear inversion using the Volterra inverse scattering series." Inverse Problems, p. 075006, (2014).

Communications in Computational Physics

1. Yao, J., Lesage, A.C., Hussain, F., Kouri, D. "Forward Scattering and Volterra Renormalization for Acoustic Wavefield Propagation in Vertically Varying Media," Com. in Comp. Phys., **20**(2), pp. 353-373

Cellular and Molecular Biology

1. Sennoune, S.R., Artunyan, A., del Rosario, C., Castro-Marin, R., Hussain, and Maritnez-Zaguilan, R. "V-ATPase regulates communication between microvascular endothelial cells and metastatic cells." Cell. Mol. Biol., **60** (1), pp. 19-25, (2014).

Biomicrofluidics

2. Khan, Z., Santos, J., Hussain, F. "Aggressive prostate cancer cell nuclei have reduced stiffness." Biomicrofluidics, **12**(1), pp. 014102 (2018).
3. Khan, Z., Santos, J., Vaz, N., Hussain, F. "Enhanced blebbing as a marker for metastatic prostate cancer." Biomicrofluidics, **13**(1), pp. 034110 (2019).

American Journal of Physiology-Cell Physiology

1. Santos, J., Martinez-Zaguilan, R., Facanha, A., Hussain, F., Sennoune, S. "Vacuolar H+-ATPase in the Nuclear Membranes Regulates Nucleo-Cytosolic Proton Gradients," Am. J. of Physiology-Cell Physiology, **311**(4), pp. C547-C558 (2016)

The Journal of Nutritional Biochemsitry

1. Santos, J.M., Khan, Z. S., Munir, M. T., Trafdar, K., Rahman, S. M., Hussain, F., "Vitamin D_3 decreases glycolysis and invasiveness and increases cellular stiffness in breast cancer cells." The J. of Nutritional Biochemistry, **53**, pp. 111-120 (2018).
2. Santos, J.M., Hussain, F. "VD_3 mitigates breast cancer aggressiveness by targeting V-H^+ -ATPase." The J. of Nutritional Biochemistry, **70**, pp. 185-193 (2019).

Nutrition and Cancer

1. Santos, J.M., Hussain, F. "Higher Glucose Enhances Breast Cancer Cell Aggressiveness." Nutrition and Cancer, pp. 1-13 (2019).

Boundary-Layer Meteorology

1. Satyaprakash, B.R., Antonia, R.A. Britz, D.H. and Hussain, A.K.M.F., "Use of Breakdown Coefficients in Turbulent Jets to Determine the Universal Exponent μ," Boundary-Layer Meteorology, **24**, pp. 77-87, (1982).

Public Library of Science

1. Lee, Y., Koay, E., Zhang, W., Qin, L., Kirui, D., Hussain, F., Shen, H., and Ferrari, M. "Human Equilibrative Nucleoside Transporter-1 Knockdown Tunes Cellular Mechanics through Epithelial-Mesenchymal Transition in Pancreatic Cancer Cells," PLoS One, **9**, 10, pp. e107973-1 – e107973-11, (2014).

Journal of Biomedical Nanotechnology

1. Jaiswal, D., James, R., Shelke, N. B., Harmon, M. D., Brown, J. L., Hussain, F. and Kumbar, S. G. "Gelatin Nanofiber Matrices Derived from Schiff Base Derivative for Tissue Engineering Applications," J. of Biomedical Nanotechnology, **11,** 11 pp. 2067-2080, (2015).

Meccanica

1. Schoppa, W. and Hussain, F. “Genesis of Longitudinal Vortices in Near-Wall Turbulence,” Meccanica, **33**, pp. 489-501, (1998).

ASAIO Journal

1. Arora D., Hussain F, Behr M, Pasquali M, Yuri K, Motomura T, and Nose Y. “Prediction and measurement of mechanical hemolysis in an implantable centrifugal blood pump,” ASAIO J. 51:5A, (2005).

Aeronautical Quarterly

1. Hussain, A.K.M.F. and Ramjee, V., "Periodic Wake Behind a Circular Cylinder at Low Reynolds Numbers," Aeronautical Quarterly, **27**, pp. 123-142, (1976).

Journal of Pressure Vessel Technology

1. Dalton, C., Hunt, J.P. and Hussain, A.K.M.F., "The Forces on a Cylinder Oscillating Sinusoidally in Water: Further Experiments," J. Pressure Vessel Technology, Trans. ASME, **100**, pp. 297-301, (1978).

Journal of Flow-visualization Society

1. Shlien, J.D. and Hussain, A.K.M.F., "Visualization of the Entraining Flow in the Self-Preserving Region of a Plane Jet," J. Flow-visualization. Soc., Japan, **2**, pp. 587-594, (1982).

Journal of Japan Society of Fluid Mechanics

1. Hayakawa, M., Hussain, A.K.M.F. and Kida, S., "Eduction Technique for Organized Turbulent Structures Based on Vorticity Concentration," J. Japan. Soc. Fluid Mech., **5**, pp. 54-63, (1986).

Revista Mexicana de Fisica

1. Peralta-Fabi, R., Mandujano-Garcia, A. and Hussain, F. "An Exact Solution For a Decaying Symmetric Vortex," Rev. Mex. Fis., **37**, pp. 8-16, (1991).

Journal of Vibration and Acoustics

1. Ghosh, A., Bridges, J. and Hussain, F. "Instantaneous Directivity in Jet Noise by Multipole Decomposition," J. Vib. Acous., Trans ASME, **117**, pp. 172-179, (1995).

Computational Fluid Dynamics Review

2. Virk, D., Schoppa, W., and Hussain, F. "DNS Studies of Vortex Dynamics of Relevance to Turbulent Flows" Computational Fluid Dynamics Review 1995, John Wiley & Sons pp. 641-678, (1995).

Vortex Flows and Related Numerical Methods

1. Hussain, F., and Melander, M. V. “Reconnection, Core Dynamics and Interaction” Vortex Flows and Related Numerical Methods, **395**, p. 239 (2013).

Lecture Notes in Physics

1. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "The Free Shear Layer Edgetone and Instability Measurements," Lecture Notes in Physics, **75**, Springer-Verlag, (1978).
2. Hussain, A.K.M.F., "Initial Condition Effect on Free Turbulent Shear Flow," Lecture Notes in Physics, **75**, Springer-Verlag, pp. 103-107, (1978).

3. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "Controlled Perturbation of Circular Jets," Lecture Notes in Physics, **75**, Springer-Verlag, pp. 31-42, (1978).
4. Hussain, A.K.M.F., "Coherent Structures in Perturbed and Unperturbed Jets," Lecture Notes in Physics, **136**, Springer-Verlag, pp. 252-291, (1981).

Proceedings of the Indian Academy of Sciences

1. Hussain, A.K.M.F., "The Role of Coherent Structures in Turbulent Shear Flows," Sadhana: Proc. Indian Acad. Sci., (Engr. Sci), **4**, pp. 129-175, (1981).
2. Takaki, R. and Hussain, A.K.M.F., "Recombination of Two Vortex Filaments and Jet Noise," Proc. Ind. Acad. Sci. **10**, Parts III and IV, pp. 389-402, (1987).
3. Hussain, F., Virk, D. and Melander, M. V. "New Studies in Vortex Dynamics: Incompressible and Compressible Vortex Reconnection, Core Dynamics, and Coupling Between Large and Small Scales," Sadhana: Proc. Indian Acad. Sci., **18**, pp. 479-529, (1993).
4. Goldshtik, M., Hussain, F. and Yao, R.J "The Vortex Liquid Piston Engine and some other Vortex Technologies," Sadhana: Proc. Indian Acad. Sci., **22** (95), pp. 323-368, (1997).

Holographic Particle Image Velocimetry

1. Hussain, F., Liu, D. D., Simmons, S. and Meng, H. "Holographic Particle Velocimetry: Prospects and Limitations," in Holographic Particle Image Velocimetry, FED-Vol. 148, ASME (ed. E. P. Rood), pp. 1-11, (1993).
2. Meng, H., Hussain, F., Anderson, W. and Liu, D. D. "Theoretical and Experimental Studies of Speckle Noise in In-Line Holography of Particle Fields," in Holographic Particle Image Velocimetry, FED-Vol. 148, ASME, (ed. E. P. Rood), (1993).

Applied Scientific Research

1. Jeong, J., Grinstein, F. F., and Hussain, F., "Eduction of Coherent Structures in a Numerically Simulated Plane Wake," Appl. Sci. Res., **53**, p. 227, (1994).

Turbulent Shear Flows

1. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "The Mechanics of Vortex Pairing in Circular Jet Under Controlled Excitation," Turbulent Shear Flows, Vol. 2, Springer-Verlag, pp. 327-343, (1980).
2. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "The Preferred-Mode Coherent Structure in the Near Field of an Axisymmetric Jet With and Without Excitation," in Unsteady Turbulent Shear Flows (Eds. R. Michel, J. Cousteix and R. Houdeville), Springer-Verlag, N.Y., pp. 390-401, (1981).
3. Nallasamy, M. and Hussain, A.K.M.F., "Numerical Study of the Phenomenon of Turbulent Suppression in a Plane Shear Layer," Turb. Shear Flows, **4**, (1984).
4. Metcalfe, R.W., Hussain, A.K.M.F., Menon, S. and Hayakawa, M. "Coherent Structures in a Turbulent Mixing Layer: a Comparison between Direct Numerical Simulation and Experiments," Turbulent Shear Flows V (eds. Durst et al.) Springer, (1987).

5. Melander, M.V. and Hussain, F., "Cut-and-Connect of Two Antiparallel Vortex Tubes: A New Cascade Mechanism," Turbulent Shear Flows VI (eds. Reynolds et al.), (1989).
6. Lee, C., Metcalfe, R.W. and Hussain, F., "Large-Scale Structures in Reacting Mixing Layers," Turbulent Shear Flows VII pp. 331-343, (1991).
7. Metcalfe, R.W., Hussain, F. and K.-H. Park, "Role of Rolls and Ribs in Reacting Mixing Layers," 8th Symp. on Turb. Shear Flow, Munich, Sept. 9-11, (1991).
8. Melander, M.V. and Hussain, F. "Coherent Structure Dynamics: Interaction between Large and Fine Scales," 8th Symp. on Turb. Shear Flow, Munich, Sept. 9-11, (1991).
9. Melander, M.V., Hussain, F. and Basu, A. "Breakdown of a Circular Jet into Turbulence," 8th Symp. on Turb. Shear Flow, Munich, Sept. 9-11, (1991).

Advances in Turbulence

1. Takaki, R. and Hussain, A.K.M.F., "Analysis of Cut-and-Connect of Vortex Filaments," in Advances in Turbulence, (eds. G. Comte-Bellot and J. Mathieu), Springer-Verlag, (1987).
2. Hayakawa, M.R. and Hussain, A.K.M.F., "Turbulence Structure in a Cylinder Wake," in Advances in Turbulence, (eds. G. Comte-Bellot and J. Mathieu), Springer-Verlag, (1987).
3. Husain, H.S. and Hussain, F., "Subharmonic Resonance in a Shear Layer," in Advances in Turbulence **2** (eds. H. Fernholtz and H. Fiedler), pp. 96-101, (1989).
4. Matsumoto, N., Shirayama, S., Kuwahara, K. and Hussain, F., "Three-dimensional Simulation of Taylor-Couette Flow," in Advances in Turbulence **2** (eds. H. Fernholtz and H. Fiedler), pp. 366-370, (1989).
5. Ishii, K., Hussain, F., Kuwahara, K. and Liu, C.H., "The Dynamics of Vortex Rings in an Unbounded Domain," in Advances in Turbulence **2** (eds. H. Fernholtz and H. Fiedler), pp. 51-56, (1989).
6. Grinstein, F.F., Hussain, F. and Boris, J.P., "Dynamics and Topology of Coherent Structures in a Plane Wake," in Advances in Turbulence 3 (eds. A.V. Johanson and F.H. Alfredsson), Springer-Verlag, pp. 34-41, (1991).

Topological Fluid Mechanics

1. Melander, M.V. and Hussain, F., "Topological Aspects of Vortex Reconnection," in Topological Fluid Mechanics (eds: H.K. Moffatt and A. Tsinober), Cambridge U. Press, pp. 485-499, (1990).
2. Kerr, R.M., Virk, D. and Hussain, F. "Effects of Incompressible and Compressible Vortex Reconnection," in Topological Fluid Mechanics (eds. H.K. Moffatt and A. Tsinober), Cambridge U. Press, pp. 500-514, (1990).
3. Kida, S., Takaoka, M. and Hussain, F., "Reconnection of Two Vortex Rings," in Topological Fluid Mechanics (eds. H.K. Moffatt and A. Tsinober), Cambridge U. Press, pp. 525-534, (1990).

4. Metcalfe, R.W. and Hussain, F., "Topology of Coherent Structures and Flame Sheets in Reacting Mixing Layers," in Topological Fluid Mechanics (eds. H.K. Moffatt and A. Tsinober), Cambridge U. Press, pp. 659-668, (1990).
5. Hunt, J.C.R. and Hussain, F., "Helicity Associated With Flow around Fluid Lumps and With Inhomogeneous Turbulence," in Topological Fluid Mechanics (eds. H.K. Moffatt and A. Tsinober), Cambridge U. Press, pp. 727-742, (1990).

Flow Visualization III

1. Bandyopadhyay, P. and Hussain, A.K.M.F., "The Organized Motions in "Puff," in Transitional Pipe Flow," in Flow Visualization III (ed. W.J. Yang), Hemisphere Publ., pp. 521-525, (1985).
2. Husain, H.S. and Hussain, A.K.M.F., "Flow Visualization of Coherent Structure Interactions in the Near Field of a Plane Jet," in Flow Visualization III (ed. W.J. Yang), Hemisphere Publ., pp. 510-513, (1985).
3. Shlien, D.J. and Hussain, A.K.M.F., "Visualization of the Large-scale Motion in the Self-preserving Region of a Plane Jet," in Flow Visualization III (ed. W.J. Yang), Hemisphere Publ., pp. 498-502, (1985).

Nonlinear Stability of Nonparallel Flows

1. Shtern, V. and Hussain, F. "Bifurcation Cascade in a Diverging Flow," in Nonlinear Stability of Nonparallel Flows (eds. S. P. Lin, W.R.C. Philips, and D.T. Valentine) Springer-Verlag, pp. 449-458, (1994).
2. Broze, G. and Hussain, F. "Nonlinear Dynamics of Forced Transitional Jets: Temporal Attractors and Transition to Chaos," in Nonlinear Stability of Nonparallel Flows (eds. S. P. Lin, W.R.C. Philips, and D.T. Valentine) Springer-Verlag, (1994).
3. Schoppa, W., Husain, H. S. and Hussain, F. "Nonlinear Instability of Free Shear Layers: Subharmonic Resonance and Three-Dimensional Vortex Dynamics," in Nonlinear Stability of Nonparallel Flows (eds. S. P. Lin, W.R.C. Philips, and D.T. Valentine) Springer-Verlag, pp. 251-280, (1994).

Symposium on Turbulence

1. Hussain, A.K.M.F. “Investigations of Coherent Structures in Free Turbulent Shear Flows,” Symp. on Turbulence, Science Pr. Princeton, pp. 207-228, (1979).
2. Hussain, A.K.M.F., "Investigations of Coherent Structures in Free Turbulent Shear Flows," in Sixth Symposium on Turbulence, (eds. G. Patterson and J. Zakin), Science Press, Princeton, pp. 207-228, (1981).
3. Nallasamy, M. and Hussain, A.K.M.F., "Response of the Axisymmetric Mixing Layer to Subharmonic Forcing at Different Amplitudes," in 8th Biennial Symposium on Turbulence (eds. G. Patterson and J. Zakin), pp. 106-116, (1983).

Proceedings of the International Union of Theoretical and Applied Mechanics Symposium on Slender Vortices

1. Hussain, F. and Schoppa, W. “Dynamics of Slender Vortices near the Wall in a Turbulent Boundary Layer,” Proceedings of the IUTAM Symposium on Slender

Vortices, Kluwer Academic Publishers, RWTH Aachen, Aachen, Germany, pp. 155-172, (1998).

2. Schoppa, W. and Hussain, F. "Genesis and Longitudinal Vortices in Near-Wall Turbulence," Proceedings of the IUTAM Symposium on Slender Vortices, Kluwer Academic Publishers, RWTH, Aachen, Germany, pp. 183-192, (1998).
3. Shtern, V. and Hussain, F. "Vortex Breakdown as a catastrophe," Proceedings of the IUTAM Symposium on Slender Vortices, Kluwer Academic Publishers, RWTH Aachen, Aachen, Germany, pp. 297-306, (1998).

Nonlinear Dynamics of Structures

1. Metcalfe, R.W. and Hussain, F., "Large-Scale Structures in Reacting Mixing Layers," in Nonlinear Dynamics of Structures (eds. R.Z. Sagdeev *et al.*), World Scientific Co., pp. 165-186, (1991).
2. Broze, G. and Hussain, F., "Spatiotemporal Dynamics in Transitional Jet Flow," in Nonlinear Dynamics of Structures (eds. R.Z. Sagdeev *et al.*), World Scientific Co., pp. 391-417, (1991).

Eddy Structure Identification in Free Turbulent Shear Flows

1. Hussain, F. "New Approaches to Vortex Dynamics: Core Dynamics, Helical Waves, and Interaction with Fine Scales," in Eddy Structure Identification in Free Turbulent Shear Flows (eds. J. P. Bonnet and M. N. Glauser), Kluwer Acad. Press, (1994).
2. Jeong, J., Grinstein, F. F., Hussain, F. and Albanis, N. "Eduction of Coherent Structures in a Numerically Simulated Plane Wake," in Eddy Structure Identification in Free Turbulent Shear Flows (eds. J. P. Bonnet and M. N. Glauser), Kluwer Acad. Press, (1994).

Turbulence and Chaotic Phenomena in Fluids

1. Hussain, A.K.M.F., "Coherent Structures and Incoherent Turbulence," Turbulence and Chaotic Phenomena in Fluids (ed. T. Tatsumi) North-Holland, pp. 245-249, (1983).
2. Takaki, R. and Hussain, A.K.M.F., "Entanglement of Two Vortex Filaments," Turbulence and Chaotic Phenomena in Fluids (ed. T. Tatsumi) North-Holland, (1983).

Structure of Turbulence in Heat and Mass Transfer

1. Zaman, K.B.M.Q. and Hussain, A.K.M.F. "The Dominant Coherent Structure of the Circular Jet Organized by Controlled Perturbation," Structure of Turbulence in Heat and Mass Transfer (ed. Z. Zaric) Hemisphere Publishing, Washington D.C., (1980).
2. Hussain, A.K.M.F., "Visualization Study of the Axisymmetric Mixing Layer of a High-Reynolds Number Jet," Structure of Turbulence in Heat and Mass Transfer (ed. Z. Zaric), Hemisphere Publishing, 1980, Washington D.C., pp. 563-576, (1980).

Progress in Wall Turbulence 2

1. Araya, G., Castillo, L. and Hussain, F. "DNS of Turbulent Boundary Layers in the Quasi-Laminarization Process," Progress in Wall Turbulence 2, Springer International Publishing, pp. 63-71, (2016).

Functional Foods in Health and Disease

1. Santos, J. and Hussain, F. "Magnesium Chloride increases apoptosis and decreases prostate cancer cells migration." Funct. Foods in Health and Disease, **8**(1), pp. 62-78, (2018).

Other Journals

1. Hussain, A.K.M.F., "Prediction and Measurement of Solar Radiation Intensities at Dacca," Annual Journal of the Institute of Engineers, (Pakistan), pp. 79-92, (1964).
2. Hussain, A.K.M.F. and DeSa, V.G., "An Experimental Intermittent Absorption Refrigeration Unit Utilizing Solar Energy, "Annual Journal of the Institute of Engineers, (Pakistan), pp. 128-139, (1964).
3. Hussain, A.K.M.F., "Potential Applications of Solar Energy in Pakistan," The Pakistan Engineer, **5**, pp. 193-205, (1965).
4. Stettler, J.C. and Hussain, A.K.M.F., "On Transition of the Unsteady Pipe Flow," 1983 Biomechanics Symposium (Eds. S.L.Y. Woo and R.E. Mates), ASME, (1983).
5. Hussain, A.K.M.F., "Large-Scale Organized Motions in Jets and Shear Layers," Recent Advances in Aerodynamics (Eds. A. Krothapalli and C. Smith), Springer-Verlag, pp. 205-262, (1984).
6. Hussain, A.K.M.F., "Measurements of Large Scale Organized Motions in Turbulent Flows," Unsteady Flows in Biological Systems (ed. M.H. Friedman and D.C. Wiggert), ASME Publication, pp. 8-12, (1985).
7. Hussain, A.K.M.F. and Husain, H.S., "Passive and Active Control of Jet Turbulence," Turbulence Management and Relaminarization (eds. H. Liepmann and R. Narshimha), Springer-Verlag, pp. 445-457, (1987).
8. Husain, H.S., Bridges, J.E., and Hussain, F., "Turbulence Management via Control of Coherent Structures in Turbulent Shear Flows," Transport Phenomena in Turbulent Flows (eds. M. Hirata and N. Kasagi) Hemisphere Publ., (1988).
9. Hussain, F., Husain, H.S., and Hayakawa, M., "Coherent Structures: Their Measurement and Applications," Current Trends in Turbulence Research, Prog. in Astro. and Aero, AIAA (eds. Branover et al.), pp. 1-29, (1988).
10. Bridges, J., Husain, H.S., and Hussain, F., "Wither Coherent Structures?," Whither Turbulence? Turbulence at the Crossroads (ed. J.L. Lumley) Springer-Verlag, pp.132-151, (1990).
11. Melander, M.F., Husain, H.S., and Hussain, F., "Coherent Structures, Vortex Reconnection and Turbulence Mixing," New Perspectives in Turbulence (ed. L. Sirovich) Springer, pp. 195-228, (1991).

12. Hussain, F. and Melander, M.V., "Understanding Turbulence via Vortex Dynamics," Studies in Turbulence, (eds. T. Gatski *et al.*) Springer-Verlag, pp. 157-178, (1991).
13. Hussain, F. and Melander, M.V., " New Aspects of Vortex Dynamics: Helical Waves, Core Dynamics, Viscous Helicity Generation, and Interaction withTurbulence," Topological Aspects of the Dynamics of Fluids and Plasma (eds. H. K. Moffatt *et al.*) Kluwer Acad. Publ., pp. 377-400, (1992).
14. Hussain, F. Virk, D., and Melander, M.V., "Vortex Reconnection, Cascade and Mixing in Turbulent Flows," Advances in Turbulence Studies (eds. H. Branover and Y. Unger), AIAA, pp. 1-16, (1993).
15. Kunin, A. I., Hussain, F., Zhou, X., Prishpionok, S. J. "Moving Frames in Models of Discrete Systems (eds. K.H. Anthony and H.J. Wagner), Trans-Tech. Publications, Switzerland, pp. 175-184, (1993).
16. Hussain, F. and Melander, M. V. "Model Coherent Structure Dynamics: Vortex Reconnection Core Dynamics and Interaction with Turbulence," Vortex Flows and Related Numerical Methods (eds.: J.T. Beale, G.-H. Cottet and S. Huberson) Kluwer Acad. Publ., pp. 239-264, (1993).
17. Simmons, S., Meng, H., Hussain, F. and Liu, D. D. "Advances in Holographic Particle Velocimetry," Optical Diagnostics in Fluid and Thermal Flow, SPIE Proceedings 2005 (eds. S. S. Cha and J. D. Trolinger), (1993).
18. Hussain, F., Metcalfe, R., and Schoppa, W. "Core Dynamics Instability: a New Transition Mechanism in a Mixing Layer," Developments in Fluid Dynamics and Aerospace Engineering, (eds. S.M. Deshpande, A. Prabhu, K.R. Sreenivasan and P.R. Viswanath), Interline Publ., India, pp. 42-69, (1995).
19. Schoppa, W. and Hussain, F. "Genesis and Dynamics of Coherent Structures in Near-Wall Turbulence: A New Look," Self-Sustaining Mechanisms of Wall-Turbulence, (ed: R. Panton), Computational Mechanics Pub., pp. 385-422, (1997).
20. Pradeep, D. S. and Hussain, F. “Core Dynamics of a Coherent Structure: a Prototypical Physical-Space Cascade Mechanism?” Turbulence Structure and Vortex Dynamics (ed: J.C.R. Hunt and J.C. Vassilicos), pp. 54-82, Cambridge University Press (2000).

CONFERENCE AND SYMPOSIA PAPERS/EDITED PROCEEDINGS/SPECIAL REPORTS

1. Hussain, A.K.M.F. and Ramjee, V., "Vortex Shedding from a Circular Cylinder in the Presence of Free-Stream Disturbances," Proc. Fifth Canadian Congress of Applied Mechanics, University of New Brunswick, Fredericton, Canada, pp. 485-486, (1975).
2. Hussain, A.K.M.F. and Thompson, C.A., "Organized Motions in a Plane Turbulent Jet Under Controlled Excitation," Proc. 12th Annual Meeting of the Society of Engineering Science, University of Texas at Austin, pp. 741-752, (1975).

3. Clark, A.R. and Hussain, A.K.M.F., "Effects of the Initial Condition on the Development of a Plane Turbulent Jet," Proc. 12th Annual Meeting of the Society of Engineering Science, University of Texas at Austin, pp. 1149-1158, (1975).

4. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "Effect of Acoustic Excitation on the Turbulent Structure of a Circular Jet," Proc. Third Interagency Symposium on University Research in Transportation Noise, University of Utah, pp. 314-326, (1975).

5. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Vortex Pairing and Organized Structures in Circular Jets Under Controlled Excitation," Turbulent Shear Flows, Penn State U., pp. 11.23-11.31, (1977).

6. Clark, A.R. and Hussain, A.K.M.F., "On Convection Velocities in a Mixing Layer: Effects of the Initial Condition," Turbulent Shear Flows, Imperial College, London, pp. 2.30-2.35, (1979).

7. Sokolov, M., Hussain, A.K.M.F., and Kleis, S.J., "A Spark-Induced Turbulent Spot in a Turbulent Mixing Layer," Turbulent Shear Flows, Imperial College, London, pp. 11.13-11.18, (1979).

8. Chambers, A.J., Antonia, R.A. and Hussain, A.K.M.F., "Flow Characteristics on the Outer Part of a Circular Jet with and without Excitation," Hydraulics and Fluid Mechanics, The Institution of Engineers, Australia, pp. 295-298, (1980).

9. Zaman, K.B.M.Q. and Hussain, A.K.M.F., AIAA Paper No. 80-1338, Presented at the AIAA 13th Fluid and Plasma Dynamics Conference, Snowmass, Colorado, July 14-16, (1980).

10. Tso, J., Kovasznay, L.S.G. and Hussain, A.K.M.F., AIAA Paper No. 80-1355, Presented at the AIAA 13th Fluid and Plasma Dynamics Conference, Snowmass, Colorado, July 14-16, (1980).

11. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Eduction of the "Preferred Mode," Structure in the Axisymmetric Mixing Layer," Turb. Shear Flows, Univ. of California - Davis, pp. 11.7-11.12, (1981).

12. Stettler, J.C. and Hussain, A.K.M.F. "An Experimental Study of Instability of a Pulsatile Pipe Flow Using LDV," Int. Symp. on Applications of LDA to Fluid Mech., Lisbon, pp. 3.3-3.15, July 5-7, (1982).

13. Hussain, A.K.M.F., "Observations on Transition of the Unsteady Pipe Flow," Proc. 2nd Asian Congress of Fl. Mech., Beijing, pp. 14-15, Oct. 25-29, (1983).

14. Takaki, R. and Hussain, A.K.M.F., "Entanglement of Two Vortex Filaments," Proc. 2nd Asian Congress of Fl. Mech., Beijing, pp. 783-788, Oct. 25-29, (1983).

15. Husain, H.S. and Hussain, A.K.M.F., "Excited Elliptic Jets," Paper No. AIAA-85-0544, AIAA Shear Flow Control Conference, Bounder, Colorado, March 12-14, (1985).

16. Takaki, R. and Hussain, A.K.M.F., "Recombination of Vortex Filaments and its Role in Aerodynamic Noise," Fifth Symp. Turb. Shear Flows, Cornell U., pp. 3.19-3.26, (1985).

17. Metcalfe, R., Hussain, A.K.M.F., and Menon, S., "Coherent Structures in a Turbulent Mixing Layer: A Comparison between Direct Numerical Simulations and Experiments," Fifth Symp. Turb. Shear Flows, Cornell U., pp. 4.13-4.20, (1985).

18. Hayakawa, M. and Hussain, A.K.M.F., "Eduction of Coherent Structures in the Turbulent Plane Wake," Fifth Symp. Turb. Shear Flows, Cornell U., pp. 4.33-4.38, (1985).

19. Gad-el-Hak, M. and Hussain, A.K.M.F., "Generation of Artificial Bursts in a Turbulent Boundary Layer," Paper No. AIAA-86-0504, AIAA 24th Aerospace Sciences Meeting, (1986).

20. Hussain, A.K.M.F., "Eduction of Coherent Structures," Paper No. AIAA-86-0026, AIAA 24th Aerospace Sciences Meeting, (1986).

21. Bridges, J.E. and Hussain, A.K.M.F., "Effect of Initial Condition on Circular and Elliptic Jet Noise," Paper No. AIAA-86--0543, AIAA 24th Aerospace Sciences Meeting, (1986).

22. Hussain, A.K.M.F., Husain, H.S., Zaman, K.B.M.Q., Tso, J., Hayakawa, M., Takaki, R. and Hasan, M.A.Z., "Free Shear Flows: Organized Structures and Effects of Excitation," Paper No. AIAA-86-0235, AIAA 24th Aerospace Sciences Meeting, (1986).

23. Takaki, E. and Hussain, A.K.M.F., "Theoretical Study of Strong Interaction of Vortex Filaments," The Institute of Space and Astronomical Science Report SP, No. 4, March, (1986).

24. Takaki, R. and Hussain, A.K.M.F. "Recombination of two vortex filaments and jet noise," Proc. 3rd Asian Cong. Fluid Mech. (ed. T. Matsui), pp. 150-153, (1986).

25. Hayakawa, M. and Hussain, A.K.M.F. "The 3-D aspect of a turbulent plane wake flow," Proc. 3rd Asian Congr. Fluid Mech. (ed. T. Matsui), pp. 203-205, (1986).

26. Husain, H.S. and Hussain, A.K.M.F., "Excited Elliptic Jets," Proc. 3rd Asian Congr. Fluid Mech. (ed. T. Matsui), pp. 206-209, (1986).

27. F.F. Grinstein, E.S. Oran, J.P. Boris and Hussain, A.K.M.F., "Numerical Study of the Mean Static Pressure Field in an Axisymmetric Free Jet," Tenth Symposium on Turbulence, U. of Missouri-Rolla, September 22-24, (1986).

28. Tso, J. and Hussain, A.K.M.F., "Eduction of Large Scale Vortical Motions in a Turbulent Axisymmetric Jet," Paper No. AIAA-86-0287 AIAA 25th Aerospace Sciences Meeting, Reno, January, (1987).

29. Grinstein, F.F., Oran, E.S., Boris, J.P. and Hussain, A.K.M.F., "Numerical Simulation of the Transitional Region of an Axisymmetric Jet," Paper No. AIAA-87--0052 AIAA 25th Aerospace Sciences Meeting, Reno, January, (1987).

30. Metcalfe, R., Menon, S. and Hussain, A.K.M.F., "Physics of the Mixing Layer: Direct Numerical Simulations and Experiments," Paper No. AIAA-87-1249 AIAA 19th Fluid Dynamics, Plasma Dynamics and Lasers Conference, Honolulu, June 8-10, (1987).

31. Takaki, R. and Hussain, A.K.M.F., "Singular Interaction of Vortex Filaments," Proc. IUTAM Symp. on Fundamental Aspects of Vortex Motion, Tokyo, September 7-9, (1987).

32. Oshima, Y., Izutsu, N., Oshima, K., and Hussain, A.K.M.F., "Bifurcation of an Elliptic Vortex Ring," Proc. IUTAM Symp. on Fundamental Aspects of Vortex Motion, Tokyo, September 7-9, (1987).

33. Grinstein, F.F., Oran, E.S., and Hussain, A.K.M.F., "Simulation of the Transition Region of Axisymmetric Free Jets," Sixth Symp. Turb. Shear Flows, Toulouse, September 7-9, (1987).

34. Grinstein, E.F., Oran, E.S., and Hussain, A.K.M.F. "Numerical Simulation of Three-dimensional Coherent Structures in a Spatially Evolving Mixing Layer," Sixth Symp. Turb. Shear Flows, Toulouse, September 7-9, (1987).

35. Hussain, F., Jeong, J., and Kim, J., "Structure of Turbulent Shear Flows," in Studying Turbulence Using Numerical Simulation Databases, Report CTR-S87, Center for Turbulence Research, NASA-Ames/Stanford University, pp. 273-290, (1987).

36. Grinstein, F.F., Oran, E.S., and Hussain, F., "Three-Dimensional Numerical Simulation of a Compressible, Spatially Evolving Mixing Layer," AIAA paper no. AIAA-88-0042, presented at 26th Aerospace Sciences Meeting, Jan. 11-14, (1988).

37. Bridges, J.E. and Hussain, F. "Evolution of Noncircular Vortices," Proc. 12th World Congress on Scientific Computation, Paris, July 18-22, (1988).

38. Melander, M.V. and Hussain, F., "Cut-and-Connect of two Antiparallel Vortex Tubes," 1988 Summer Workshop Report of CTR, Stanford, U., pp. 254-286, (1988).

39. Stanaway, S., Shariff, K., and Hussain, F., "Head-on Collision of Viscous Vortex Rings," 1988 Summer Workshop Report of CTR, Stanford U, pp. 287-309, (1988).

40. Broze, J.G., Hussain, F., and Buell, J., "Chaos in a Spatially-Developing Plane Mixing Layer," 1988 Summer Workshop Report of CTR, Stanford U., pp. 3-18, (1988).

41. Mansour, N.N., Hussain, F., and Buell, J., "Subharmonic Resonance in a Plane Mixing Layer," 1988 Summer Workshop Report of CTR, Stanford U., pp. 3-18, (1988).

42. Hussain, F., Moser, R., Colonius, T., Moin, P. and Rogers, M., Vortex Dynamics and Coherent Structure Topology in a Plane Mixing Layer," 1988 Summer Workshop Report of CTR, Stanford U., pp. 57-68 (1988), pp. 49-55, (1988).

43. Toyoda, K. and Hussain, F., "Flow Visualization of Noncircular Jets," Japanese Turbulence Symposium, pp. 171-175, (1988).

44. Toyoda, K. and Hussain, F., "Study of Vortical Structures in Noncircular Jets," Japan Society of Mechanical Engineers, March 23, (1988).

45. Toyoda, K. and Hussain, F., "Dynamics of Noncircular Vortex Rings," Memoirs of Hokkaido Institute of Technology, Pub. No. 17, Hokkaido, Japan, (1988).

46. Grinstein, F.F., Hussain, F. and Oran, E., "Vortex Dynamics and Mixing Enhancement in Spatially Evolving Planar Shear Flows," AIAA Second Shear Flow Conference, Tempe, Arizona, March 16-19, (1989).

47. Broze, J.G., Hussain, F., and Buell, J., "Chaos in a Spatially Evolving Mixing Layer," 3rd Joint ASCE/ASME Mechanics Conference, UCSD, July 9-12, (1989).

48. Husain, H.S. and Hussain, F. "Vortex Dynamics in Elliptic Jets," Proc. Seventh Symp. Energy Engineering Sciences, Argonne National Lab., Illinois, June 19-21, pp. 218-225, (1989).

49. Melander, M.V. and Hussain, F., "Cut-and-connect of two anti-parallel vortex tubes: a new cascade mechanism.," 7th Symp. Turb. Shear Flows, Stanford U., Aug. 21-23, (1989).

50. Lee, C., Metcalfe, R., and Hussain, F. "Large-scale Structures Reacting Mixing Layers," 7th Symp. Turb. Shear Flows, Stanford U., Aug. 21-23, (1989).

51. Hussain, F. and Husain, H.S., "Subharmonic Resonance in a Free Shear Layer," Proc. 4th Asian Congress of Fluid Mechanics, (eds. N.W. M. Ko and S.C. Kot), pp. A 288-A291, (1989).

52. Hussain, F. and Hayakawa, M., "Structure of a Self-Preserving Plane Mixing Layer," Proc. 4th Asian Congress of Fluid Mechanics, (eds. N.W. M. Ko and S.C. Kot), pp. A134-A137, (1989).

53. Miyauchi, T., Kawano, Y., Stuhltraeger, E., and Hussain, F., "Dynamics of Spatially Evolving Incompressible Mixing Layers," in Proc. 4th Asian Congress of Fluid Mechanics, (eds. N.W.M. Ko and S.C. Kot), pp. A138-A141, (1989).

54. Toyoda, K. and Hussain, F., "Vortical Structures of Noncircular Jets," in 4th Asian Congress of Fluid Mechanics, (eds. N.W.M. Ko and S.C. Kot), pp. 117-118, (1989).

55. Stuhltraeger, E., Miyauchi, T., and Hussain, A.K.M.F., "Coherent Structures in Excited Laminar and Turbulent Axisymmetric Jets: Comparison of Direct Numerical Simulation with Laboratory Experiments," in Proc. 4th Asian Congress of Fluid Mechanics (eds. N.W.M. Ko and S.C. Kot), pp. A105-A108, (1989).

56. Iida, S. and Hussain, F., "Rayleigh-Benard Convection Problem with no-slip Conditions," in Proc. 4th Asian Congress of Fluid Mechanics (eds. N.W.M. Ko and S.C. Kot), pp. H13-H16, (1989).

57. Toyoda, K. and Hussain, F., "A Study of Vortical Structures in a Cross-shaped Jet," Presented at Japan Society of Mechanical Engineering Vol. 88, pp. 3205-3209, (1989).

58. Toyoda, K. and Hussain, F., "A Study of the Vortical Structures in Noncircular Jets," Japan Society of Mechanical Engineers, Vol. 88, pp. 1542-1545, (1989).

59. Bridges, J. and Hussain, F., "Coherent Structures in Combustion: Measurement Requirements and Holographic Particle Displacement Velocimetry," Proc. 2nd

ONR Propulsion Meeting, U. of California-Irvine, pp. 230-234, October 17-18, (1989).

60. Grinstein, F.F., Boris, J.R., Griffin, O.M., Hussain, F., and Oran, E., "Coherent Structures Dynamics in Spatially Evolving Near Wake Flows," paper No. AIAA 90-0507, AIAA 28th Aerospace Sciences Meeting, Reno, Jan 9-11, (1990).
61. Bridges, J., Meng, H., Liu, D., and Hussain, F., "Holographic Particle Velocimetry for Turbulent Reacting Shear Flows: Progress Report," Proc. 3rd ONR Annual Meeting on Propulsion and Combustion, (1990).
62. Metcalfe, R.W., Hussain, F., and Park, K.-H., "The Effects of Coherent Structures on Chemically Reacting Shear Layers," Proc. ONR Annual Meeting on Propulsion and Combustion, (1990).
63. Hussain, F. and Takaki, R. "Cut-and-Connect Interaction of Vortex Filaments," EPRI Report RP8006-9, (1990).
64. Toyoda, K. and Hussain, F., "Measurements of Pressure Fluctuations in a Circular Jet," Memoirs of Hokkaido Institute of Technology, Pub. No. 19, Hokkaido, Japan, (1991).
65. Broze, G. and Hussain F., "Experimental Observations of Chaotic Attractors and Hysteresis in an 'Open' Flow," in Proc. First Experimental Chaos Conference, (ed. S. Vohra et al) World Scientific, pp. 368-374, (1991).
66. Hussain, F. "Holographic Particle Velocimetry," Proc. 4th ONR Propulsion Meeting, Memphis, TN, October 8-10, (1991).
67. Kim, J. and Hussain, F. "Propagation Velocity and Space-time Correlation of Perturbations in Turbulent Channel Flow," NASA TM - 103932, (1992).
68. Virk, D., Hussain, F., and Kerr, R. "Numerical Simulation of Compressible Vortex Reconnection," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 443-446, (1992).
69. Park, K., Metcalfe, R., and Hussain, F. "Role of Coherent Structures in Incompressible Cold Reacting Shear Layers," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 451-453, (1992).
70. Toyoda, K. and Hussain, F. "Education of Vortical Structures in a Circular Jet by Pressure Measurements," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 587-590, (1992).
71. Hussain, F. "Understanding Turbulence via Vortex Dynamics: Some New Perspectives," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 805-814. (1992).
72. Husain, H. S., Goldshtik, M. and Hussain, F. "A New Discovery of Species Separation in Hydrodynamics: A Paradox," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 1059-1061, (1992).

73. Jeong, J. and Hussain, F. "Coherent Structure Near the Wall in a Turbulent Boundary Layer," in Proc. 5th Asian Congr. Fluid Mech. (eds. K. S. Chang and D. H. Choi). Taejon, Korea, Aug 10-14, pp. 1262-1265, (1992).

74. Shtern, V. and Hussain, F. "Internal Instability of Divergent Flows," 18th ICTAM, Haifa, Israel, August 22-28, p. 133, (1992).

75. Goldshtik, M, Husain, H. S., and Hussain, F., "Paradoxical Species Separation Phenomenon," 18th ICTAM, Haifa, Israel, August 22-28, p. 63, (1992).

76. Simmons, S., Liu, D., Meng, H. and Hussain, F. "Development of 3D Holographic Particle Velocimetry and Associated Problems," Proc. 5th ONR Propulsion Meeting, Arlington, VA, September 29-30, (1992).

77. Hussain, F., Meng, H., Liu, D., Simmons, S., Ucar, H., and Anderson, W. "Advances in Holographic Particle Velocimetry " International Conference on Lasers, Houston, TX, December 7-10, (1992).

78. Hussain, F., Meng, H., and Simmons, S. "Innovations in holographic particle velocimetry," Proc. 6th ONR Propulsion Meeting, U. of Colorado, pp. 144-158, (1993).

79. Hussain, F. and Meng, H. "Recent Innovations in Holographic Particle Velocimetry," in Proc. 7th ONR Propulsion Meeting (eds. G. Roy and P. Givi), pp. 233-249, (1994).

80. Meng, H. and Hussain, F. "Holographic Particle Image Velocimetry: A New Frontier of Fluid Dynamics Research," in Proc. 6th Asian Congr. Fluid Mech. (eds. Y.T. Chew and C.P. Tso), Nanyang Technological University, Singapore pp. 160-164, (1995).

81. Hussain, F., Simmons, S., Menon, S., Zimin, V., and Zhou, C. "Holographic Particle Velocimetry for Turbulence and Combustion Diagnostics: A Progress Report. " in Proc. 8th ONR Propulsion Mtg. (eds. G. Roy and F. Williams). UC San Diego, pp. 304-317, (1995).

82. Hussain, F., Goldshtik, M., and Yao, R.J. "The Vortex Liquid Piston Engine and Some Other Vortex Technologies," Proc. Intl. Congress Adv. Mech. Engr., Bangalore, India, pp. 1-39, (1995).

83. Narayanan, S. and Hussain, F. "Spatiotemporal Chaos in Open Flows and Control Strategies for Turbulence Management," Proc. 22nd Natl. Conf. Fl. Mech. and Fl. Power, Indian Institute of Technology, Madras, India, pp. IL4.1-IL4.8, (1995).

84. Hussain, F. and Menon, S. "Holographic Particle Velocimetry for Multiphase, Turbulent and Combustion Flows," Proc. 22nd Natl. Conf. Fl. Mech. and Fl. Power, Indian Institute of Technology, Madras, India, pp. IL1.1-IL1.14, (1995).

85. Hussain, F., Schoppa, W., and Jeong, J "Dynamics of Coherent Structures in Near-Wall Turbulence," in Proceedings of Seminar on Fluid Mech. Research, (eds. M.Q. Islam and S.J. Chowdhury), Bangladesh University, Dhaka, Bangladesh, pp. K1-K20, (1995).

86. Hussain, F., Menon, S., and Simmons, S. "Holographic Particle Velocimetry: A 3D Measurement Tool for Turbulence, Combustion, Multiphase Flow and

Biomedical Diagnostics," in Proceedings of Seminar on Fluid Mech. Research (eds. M.Q. Islam and S.J. Chowdhury), Bangladesh University, Dhaka, Bangladesh, pp. K31-K52, (1995).

87. Hussain, F., Goldshtik, M., and Yao, R.J. "The Vortex Liquid Piston Engine Technologies," in Proceedings of Seminar on Fluid Mech. Research (eds. M.Q. Islam and S.J. Chowdhury), Bangladesh University, Dhaka, Bangladesh, pp. K75-K108, (1995).

88. Schoppa, W. and Hussain, F. "Effective Drag Reduction by large-scale Manipulation of Streamwise Vortices in Near-Wall Turbulence," 28th AIAA Fluid Dynamics Conference and 4th Shear Flow Control Conference, AIAA Paper No. 97-1794, (1997).

89. Narayanan, S. and Hussain, F. "Chaos Control in Open Flows: Experiments in a Circular Jet," 28th AIAA Fluid Dynamics Conference and 4th Shear Flow Control Conference, AIAA Paper No. 97-1822, (1997).

90. Shtern, V., Herrada, M. and Hussain, F. "A Model of Turbulent Vortex Breakdown," 28th AIAA Fluid Dynamics Conference and 4th Shear Flow Control Conference, AIAA Paper No.97-1842, (1997).

91. Husain, H., Shtern, V., and Hussain, F. "Control of Vortex Breakdown using Vortex Generators," 28th AIAA Fluid Dynamics Conference and 4th Shear Flow Control Conference, AIAA Paper No. 97-1879, (1997).

92. Hussain, F. and Schoppa, W. "Dynamics of Longitudinal Vortices in Near-Wall Turbulence," Proceedings of the IUTAM Symposium on Simulation and Identification of Slender Vortices, Kluwer Academic Publishers, Lynghby, Denmark, (1997).

93. Roy, S. and Hussain, F. "Multisensor Analysis of Spatiotemporal Dynamics in Open Flows," in Proceedings of the second International Seminar on Fluid Dynamics and Heat Transfer, (eds. M.Q. Islam, A.C. Mandal and A.K.M.S. Islam) Bangladesh University, Dhaka, Bangladesh, pp. 356-361, (1997).

94. Schoppa, W. and Hussain, F. "Control of Drag and Heat Transfer in a Turbulent Boundary Layer," in Proceedings of the second International Seminar on Fluid Dynamics and Heat Transfer, (eds. M.Q. Islam, A.C. Mandal and A.K.M.S. Islam) Bangladesh University, Dhaka, Bangladesh, pp. K1-K15, (1997).

95. Narayanan, S., Roy, S., and Hussain, F. "A New Chaos Control Strategy for Open Flows: Experiments in a Transitional Jet," in Proceedings of the Seventh Asian Congress of Fluid Mechanics, Indian Institute of Technology, Chennai, India, pp. 327-330, (1997).

96. Schoppa, W. and Hussain, F. "Genesis and Dynamics of Coherent Structures in Near-Wall Turbulence," in Proceedings of the Seventh Asian Congress of Fluid Mechanics, Indian Institute of Technology, Chennai, India, pp. 441-444, (1997).

97. Schoppa, W. and Hussain, F. "A New Strategy for Drag Reduction in Turbulent Boundary Layers," in Proceedings of the 24th National Conference on Fluid Mechanics and Fluid Power, Shibpur Engineering College, Calcutta, India, (1997).

98. Narayanan, S. and Hussain, F. "Chaos Control in Open Flows: An Axisymmetric Jet," Proceedings of the 4th Experimental Chaos Conference (eds: M. Ding, W. Ditto, L. Pecora, M. Spano and S. Vohra), Boca Raton, Florida, pp. 155-160, (1997).

99. Shtern, V. and Hussain, F. "Vortex Breakdown as a Catastrophe," Proc. IUTAM Symp. of Slender Vortices, Aachen, Germany (1997).

100. Schoppa, W. and Hussain, F. "Formation of Near-Wall Streamwise Vortices by Streak Instability," 29th AIAA Fluid Dynamics Conference, Albuquerque, New Mexico, AIAA paper No. 98-3000, (1998).

101. Schoppa, W. and Hussain, F. "Numerical Study of Near-Wall Coherent Structures and Control Strategies for Turbulent Boundary Layers," in Proceedings of the 16th International Conference on Numerical Methods (ed. C.H. Bruneau), Arcachon, France, Lect. Notes in Physics, pp. 103-116, (1998).

102. Pradeep, D. S. and Hussain, F. "Vortex Dynamics Related to Cascade in Turbulence," Third International Conference on Fluid Mechanics and Heat Transfer, Dhaka, Bangladesh, pp. K1-K14, (1999).

103. Schoppa, W. and Hussain, F. "Near-wall coherent structures in a turbulent boundary layer: genesis and control," in Statistical Nature of Turbulence and its Dynamical Description based on Coherent Structures, (ed: S. Toh and K. Ohkitani), Kyoto University, (2000).

104. Shtern, V. and Hussain, F. "Buoyancy as a Driving Mechanism for Bipolar Jets," in Abstract Book of the 20th International Congress of Theoretical and Applied Mechanics, Chicago, (2000).

105. Schoppa, W. & Hussain, F. "Near-Wall Coherent Structure Generation in Turbulent Boundary Layers," in Proceedings of 14th Australasian Fluid Mechanics Conference, Adelaide, Australia, Dec. 10-14, (2001).

106. Schoppa, W. & Hussain, F. "Mechanism of coherent structure generation in near-wall turbulence," in Proc. Int. Symp on Dynamics and Statistics of Coherent Structures in Turbulence, Oct 21-23, (2002), Tokyo, Japan.

107. Pradeep, D. S. and Hussain, F. "The interaction between a coherent structure and turbulence," in Advances in Fluid Mechanics, (eds: M. Alam, R. Govindarajan, O.N. Ramesh, K. R. Srinivas), JNCASR, Bangalore, India, pp. 272-283, (2003).

108. Pradeep, D.S. and Hussain, F. "Role of transient growth in coherent structure-turbulence interaction," in Turbulence Physics and Control, (eds. H. Choi & P. Moin), CTR, Stanford University, pp. 29-30, (2007).

109. Decuzzi, P. and Hussain, F. "Rational Design of Nanoparticles for Cancer Drug Delivery," Proceedings of 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec. 17-21, (2010).

110. Duraisamy, K. and Hussain, F. "Mechanics of Viscous Vortex Reconnection," Proceedings of 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec. 17-21, (2010).

111. Zandian, A., Sirignano, W. A., and Hussain, F. "Three-Dimensional Liquid Sheet Breakup: Vorticity Dynamics", 54th AIAA Aerospace Sciences Meeting, San Diego, CA, p. 1593, (2016).

112. Castillo, R., Wang, Y., Monk, T., Vasquez, S., Pol, S., Ren, B., Swift, A., Hussain, F., Westergaard, C. "PIV measurements in a real time controlled model wind turbine wake simulator." Journal of Physics: Conference Series, **753** (3), p 032055 (2016).

113. Shadloo, M.S., Hadjadj, A., Bodony, D.J., Hussain, F., and Lele, S.K. "Effects of heat transfer on transitional states of supersonic boundary layers." 2016 Summer Workshop Report of CTR, Stanford U., pp. 175-184, (2017).

114. Zandian, A., Sirignano, W., and Hussain, F. "Mechanisms of Liquid Stream Breakup: Vorticity and Time and Length Scales." 28th European Conference on Liquid Atomization and Spray Streams, Editorial Universitat Politècnica de València (2017).

115. Nelson, C., Cain, A., and Hussain, F. "Simulations of Compressible Channel Flow with Pulsed-DC Plasma Actuation for Drag Reduction." AIAA Scitech 2019 Forum, AIAA (2019).

116. Daryan. H., Hussain, F., Hickey, J.P. "Aeroacoustic Noise Generation in Compressible Vortex Reconnection." 11th International Symposium on Turbulence and Shear Flow Phenomena, Southampton, UK (July 30 to August 2, 2019).

OTHER SCIENTIFIC PUBLICATIONS (Published Abstracts of Oral Presentations)

1. Hussain, A.K.M.F. and Reynolds, W.C, "An Experimental Study of Shear Waves in Turbulent Flow," Bull. Am. Phys. Soc., Ser. II, **11**, p.1545, (1970).

2. Hussain, A.K.M.F., Kovasznay, L.S.G. and Ali, F., "Thermal and Vorticity Interfaces of a Heated Turbulent Wake," Bull. Am. Phys. Soc., Ser. II, **11**, p. 1323, (1971).

3. Hussain, A.K.M.F. and Thompson, C.A., "Controlled Excitation of a Plane Turbulent Jet," Bull. Am. Phys. Soc., Ser. II, Vol. 19, **10**, p. 1152, (1974).

4. Hussain, A.K.M.F. and Ramjee, V., "Periodic Wake of a Circular Cylinder in the Presence of Free Stream Disturbances," Bull. Am. Phys. Soc., Ser. II, Vol. 19, **10,** p. 1164, (1974).

5. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "Response of a Circular Jet of Controlled Excitation," Bull. Am. Phys. Soc., Ser. II, **11,** p. 1435, (1975).

6. Hussain, A.K.M.F. and Clark, A.R., "Effects of Exit Conditions on the Development of a Plane Turbulent Jet," Volume of Abstracts, at 14th Midwestern Mechanics Conference, University of Oklahoma, p. 30, (1975).

7. Hussain, A.K.M.F. and Ramjee, V., "Effects of the Contraction Shape on the Flow Through a Contraction," Vol. of Abstracts, 14th Midwestern Mechanics Conference, University of Oklahoma, p. 33, (1975).

8. Hussain, A.K.M.F. and Clark, A.R., "Upstream Influence on the Near Field of a Plane Turbulent Jet," presented at the 29th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, University of Oregon, November 22-24, (1976).
9. Hussain, A.K.M.F., "Effects of the Initial Condition on Free Turbulent Shear Flows," 8th U.S. National Congress on Applied Mechanics, UCLA, June 26-30, p. 44, (1978).
10. Hussain, A.K.M.F., and Zaman, K.B.M.Q., "Free Shear Layer Tone Phenomenon and Instability," 8th U.S. National Congress on Applied Mechanics, UCLA, June 26-30, p. 44, (1978).
11. Hussain, A.K.M.F. and Zaman, K.B.M.Q., "Coherent Structure Dynamics in the Near Field of a Circular Jet Under Controlled Excitation," Bull. Am. Phys. Soc. Ser. II, **24**, p. 1133, (1979).
12. Hasan, M.A.Z. and Hussain, A.K.M.F., "Self-Sustained Oscillation of a Circular Jet with a Pipe-Collar Nozzle," Bull. Am. Phys. Soc. Ser. II, **24**, p. 1127, (1979).
13. Antonia, R.A. and Hussain, A.K.M.F., "Dissipation Rates in Plane and Circular Jets," Bull. Am. Phys. Soc. Ser. II, **24,** p. 1128, (1979).
14. Clark, A.R. and Hussain, A.K.M.F., "Flow-Visualization of Naturally Occurring Structure in a High-Re Axisymmetric Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **24,** p. 1132, (1979).
15. Khalifa, M.A., Hussain, A.K.M.F., and Kleis, S.J., "Symmetric and Antisymmetric Perturbations of the Plane Jet" Bull. Am. Phys. Soc. Ser II, **24**, p. 1128 (1979).
16. Sokolov, M., Hussain, A.K.M.F., and Kleis, S.J., "Evolution of a Large-Scale Structure in an Axisymmetric Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **24**, p. 1133, (1979).
17. Zaman, K.B. M.Q. and Hussain, A.K.M.F., "Suppression of Turbulence Intensity in Free Shear Flows by Controlled Excitation," Bull. Am. Phys. Soc., Ser. II, **24, p.** 1137, (1979).
18. Tso, J., Kovasznay, L.S.G. and Hussain, A.K.M.F., "Search for Large Scale Coherent Structures in the Similarity Region of a Turbulent Jet," Bull. Am. Phys. Soc., Ser. II, **24**, p. 1133, (1979).
19. Husain, Z.D. and Hussain, A.K.M.F., "An Experimental Study of Instability and Natural Roll-up of the Free Shear Layer," Bull. Am. Phys. Soc., Ser. II, **24**, p. 1144, (1979).
20. Kleis, S.J. and Hussain, A.K.M.F., "The Asymptotic State of the Plane Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **24**, p. 1132, (1979).
21. Kita, Y., Hussain, A.K.M.F., and Kleis, S.J., "Controlled Perturbation of the Plane Mixing Layer," Bull Am. Phys. Soc., Ser. II, **25**, p. 1070, (1980).
22. Kleis, S.J. and Hussain, A.K.M.F. "The Spark-Induced Large-Scale Coherent Structure in a Plane Mixing Layer," Bull. Am. Phys. Soc., Ser II, **25**, p. 1070, (1980).

23. Ali, S.K. and Hussain, A.K.M.F. "Effect of the Cut-off Frequency of Fine-Scale Turbulence Measurements," Bull Am. Phys. Soc., Ser. II, **25,** p. 1074, (1980).
24. Hussain, A.K.M.F. and Zaman, K.B.M.Q. "An Experimental Study of the Circular Jet Preferred Mode," Bull. Am. Phys. Soc., Ser. II, **25**, p. 1082, (1980).
25. Tso, J. and Hussain, A.K.M.F., "Large-Scale Structures in the Self-Preserving Region of a Turbulent Axisymmetric Jet," Bull. Am. Phys. Soc., Ser. II, **25**, p. 1082, (1980).
26. Husain, H.S. and Hussain, A.K.M.F., "Structure of the Plane Turbulent Jet," Bull. Am. Phys. Soc., Ser. II, **25,** p. 1082, (1980).
27. Husain, Z.D. and Hussain, A.K.M.F., "The Spread and Decay Rates in the Self-Preserving Region of an Axisymmetric Jet," Bull. Am. Phys. Soc., Ser. II, **25**, p. 1082, (1980).
28. Antonia, R.A. and Hussain, A.K.M.F., "Statistics of Finite-Scale Velocity in Turbulent Plane and Circular Jets," Bull. Am. Phys. Soc., Ser. II, **25**, p. 1086, (1980).
29. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Applicability of the Taylor Hypothesis to the Large-Scale Coherent Structures," Bull. Am. Phys. Soc., Ser. II, **25,** p. 1086, (1980).
30. Shlien, D.J. and Hussain, A.K.M.F., "Visualization Study of the Self-Preserving Region of a Plane Turbulent Jet," Bull. Am. Phys. Soc. Ser. II, **26**, p. 1251, (1981).
31. Bechert, D.W. and Hussain, A.K.M.F., "Vorticity-Acoustic Wave Interaction in a Free Shear Layer," Bull. Am. Phys. Soc., Ser. II, **26**, p. 1263, (1981).
32. Kleis, S.J. Kita, Y. and Hussain, A.K.M.F., "Large-Scale Structures in an Excited Plane Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **26**, p. 1273, (1981).
33. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Eduction of the 'Preferred-Mode' Coherent Structure of the Unexcited Axisymmetric Jet," Bull. Am. Phys. Soc., Ser. II, **26**, p. 1251, (1981).
34. Hussain, A.K.M.F. and Zaman, K.B.M.Q. "The Natural Large-Scale Coherent Structure in an Initially Turbulent Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **26**, p. 1273, (1981).
35. Zaman, K.B.M.Q. and Hussain, A.K.M.F., "Eduction of Natural Large-Scale Structures in Mixing Layers," Bull. Am. Phys. Soc., Ser. II, **27** p. 1163, (1982).
36. Husain, H.S. and Hussain, A.K.M.F., "Interaction of Coherent Structures in the Near Field of a Plane Jet," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1164, (1982).
37. Stettler, J.C. and Hussain, A.K.M.F., "Laminar-Turbulent Transition in Sinusoidally-Modulated Pipe Flow," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1170, (1982).
38. Tso, Jin and Hussain, A.K.M.F., "Coherent Structures in the Self-Preserving Region of an Axisymmetric Turbulent Jet," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1164, (1982).

39. Bandyopadhyay, P. and Hussain, A.K.M.F., "Low and High Frequency Components of Velocity Signals in Shear Flows," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1174, (1982).

40. Nallasamy, M. and Hussain, A.K.M.F., "Numerical Simulation of an Excited Shear Layer," Turbulence Suppression," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1178, (1982).

41. Hasan, M.A.Z., Islam, O. and Hussain, A.K.M.F., "Amplification of Broadband Jet Noise by the 'Whistler Nozzle," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1181, (1982).

42. Husain, Z.D. and Hussain, A.K.M.F., "Effects of Exit Excitation on Axisymmetric Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **27**, p. 1192, (1982).

43. Bridges, J.E. and Hussain, A.K.M.F., "The Noise Field of a Subsonic Elliptic Jet," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1355, (1983).

44. Husain, H.S. and Hussain, A.K.M.F., "Excited and Unexcited Elliptic Jets," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1402, (1983).

45. Hayakawa, M., Tso, J., Kleis, S.J. and Hussain, A.K.M.F., "Eduction of Coherent Structures in a Plane Wake," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1370, (1983).

46. Leitko, A.D. and Hussain, A.K.M.F., "Flow Visualization of Slugs in Transitional Pipe Flow," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1402, (1983).

47. Plaschko, P. and Hussain, A.K.M.F., "A Nonlinear Stability Theory for a Nonparallel Shear flow: the Evolution of Broadband Turbulence," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1402, (1983).

48. Bandyopadhyay, P. and Hussain, A.K.M.F., "The Turbulence Production Mechanism in an Equilibrium Puff in Transitional Pipe Flows," Bull. Am. Phys. Soc., Ser. II, **28**, p. 1401, (1983).

49. Jenkinson, J.P., Husain, H.S., and Hussain, A.K.M.F., "Coherent Structures in the Self-preserving Region of a Plane Jet," Bull. Am. Phys. Soc., **29**, p. 1562, (1984).

50. Bridges, J.E. and Hussain, A.K.M.F., "Effects of Initial Conditions in Geometry on Jet Noise," Bull. Am. Phys. Soc. **29**, p. 1518, (1984).

51. Leitko, A.D., Tan, H., and Hussain, A.K.M.F., "Particle Displacement Velocimetry Using Digital Image Processing," Bull. Am. Phys. Soc., **29**, p. 1532 (1984).

52. Hussain, A.K.M.F., Hayakawa, M., and Metcalfe, R.W., "Organized Structures in Plane Mixing Layer and Plane Wake," Bull. Am. Phys. Soc., **29**, p. 1548, (1984).

53. Husain, H.S. and Hussain, A.K.M.F., Vortex Pairing in an Elliptic Jet," Bull. Am. Phys. Soc., **29**, p. 1563, (1984).

54. Broze, J.G. and Hussain, A.K.M.F., "Flow Visualization of Organized Motion in a Wall Jet," Bull. Am. Phys. Soc., **30**, p. 1729, (1985).

55. Degani, A.T., Hussain, A.K.M.F. and Tezduyar, T., "Dynamics of Four Point Vortices," Bull. Am. Phys. Soc., **30**, p. 1745, (1985).

56. Hussain, A.K.M.F. and Gad-el-Hak, M., "Generation of Artificial Burst in a Turbulent Boundary Layer," Bull. Am. Phys. Soc., **30**, p. 1751, (1985).

57. Metcalfe, R.W., Hussain, A.K.M.F., Hayakawa, M., and Menon, S., "Coherent Structures in the Plane Mixing Layer: Experiments and Direct Numerical Simulations," Bull. Am. Phys. Soc., **30**, p. 1729, (1985).

58. Hussain, A.K.M.F. and Bridges J.E., "Coherent Vorticity and Acoustic Sources," Tenth U.S. National Congress of Applied Mechanics, U. of Texas, June 16-20, (1986).

59. Bridges, J.E. and Hussain, A.K.M.F., "Measurements Concerning Vortex Pairing as a Noise Source in Turbulent Jets," Bull. Am. Phys. Soc. II, **31**, p. 1684, (1986).

60. Husain, H.S. and Hussain, A.K.M.F., "Subharmonic Resonance in a Free Shear Layer," Bull. Am. Phys. Soc. II, **31**, p. 1696, (1986).

61. Stern, c. and Hussain, A.K.M.F., "New Observations in Flow Between Counter-rotating Cylinders," Bull. Am. Phys. Soc. II, **31**, p. 1704, (1986).

62. Ross, M.P. and Hussain, A.K.M.F., "Conditions for the Third Transition in Taylor-Couette Flow," Bull. Am. Phys. Soc. II, **31**, p. 1704, (1986).

63. Hussain, A.K.M.F., "Passive and Active Control of Jet Turbulence," IUTAM Symp. Turbulence Management Relaminarization, Bangalore, India, January 19-23, (1987).

64. Ross, M.P. and Hussain, A.K.M.F., "Conditions for Third Transition in Taylor-Couette Flow," Fifth Taylor-vortex Flow Working Party, Arizona State Univ., March 25-27, (1987).

65. Stern, C. and Hussain, A.K.M.F., "New Observations in Flow between Counter-rotating Cylinders," Fifth Taylor-Vortex Flow Working Party, Arizona State Univ., March 25-27, (1987).

66. Grinstein, F.F., Oran, E.S., and Hussain, A.K.M.F., "Numerical Simulation of Three-Dimensional Coherent Structures in a Spatially Evolving Mixing Layer," 6th Symp. Turb. Shear Flows, Toulouse, France, September 7-9, (1987).

67. Jenkinson, J.P. and Hussain, A.K.M.F., "Search for Chaotic Behavior in Transitional Pipe Flow," Bull. Am. Phys. Soc., Ser. II **32**, p. 2026, (1987).

68. Jeong, J., Kim, J. and Hussain, A.K.M.F., "Eduction of Coherent Structures from Simulation of Shear Flows," Bull. Am. Phys. Soc., Ser. II, **32**, p. 2064, (1987).

69. Broze, J.G., Jenkinson, J.P., and Hussain, A.K.M.F., "Spatial Dependence of Dimension in Transitional Jet Flows," Bull. Am. Phys. Soc., Ser. II, **32**, p. 2064, (1987).

70. Grinstein, F.F., Oran, E.S., and Hussain, A.K.M.F., "Coherent Structures in a Spatially Evolving Three-Dimensional Mixing Layer," Bull. Am. Phys. Soc., Ser. II, **32**, p. 2064, (1987).

71. Bridges, J.E. and Hussain, A.K.M.F., "Simulation of Vortex Motions Relevant to Jet Noise," Bull Am. Phys. Soc. Ser. II, **32**, p. 2093, (1987).

72. Hussain, A.K.M.F., Kim, J., and Spalart, P., "On Propagation Speeds in Turbulent Shear Flows," Bull. Am. Phys. Soc., Ser II, **32**, pp. 2093, (1987).

73. Grinstein, F.F., Oran, E.S., and Hussain, A.K.M.F., "Three-Dimensional Numerical Simulation of Spatially Evolving Compressible Shear Flows," Bull. Am. Phys. Soc., Ser II, **32**, p. 2119, (1987).

74. Hussain, A.K.M.F. and Ross, M., "The Effects of Aspect Ratio on the Doubly-Periodic Taylor-Couette Flow," Tenth U.S. National Congress of Applied Mechanics, U. of Texas-Austin, 16-20 June, (1988).

75. C. Stern and Hussain, F. "Experimental Study of Azimuthal Mode Interaction in a Flow between Counter-Rotating Cylinders," Dynamics Days, U. of Houston, Jan. 5-8, (1988).

76. Broze, G., Jenkinson, J., and Hussain, F. "Spatial Dependence of Correlation Dimension in Transitional Jets," Dynamic Days, U. of Houston, Jan 5-8, (1988).

77. Hunt, J.C.R., Carruthers, D.J., and Hussain, F., "Vorticity Dynamics of Idealized Coherent Structures," IUTAM Congress, Grenoble, August 21-27, (1988).

78. Ishii, K., Hussain, F., Kuwahara, K., and Liu, C.H. "The Dynamics of an Elliptic Vortex Ring," IUTAM Congress, Grenoble, August 21-27, (1988).

79. Metcalfe, R.W., Menon, S., and Hussain, F., "Coherent Structures in Reacting Free Shear Flows," IUTAM Congress, Grenoble, August 21-27, (1988).

80. Stuhtraeger, E., Miayuchi, T., and Hussain, F., "Coherent Structures in Unexcited and Excited Axisymmetric Jets: Comparison of Direct Numerical Simulation with Laboratory Experiments," European Turbulence Conference, Grenoble, August 21-27, (1988).

81. Hayakawa, M. and Hussain, F., "Topological Features of the Turbulence Structure in the Plane Wake," IUTAM Congress, Grenoble, August 21-27, (1988).

82. Husain, H.S. and Hussain, F., "Dynamics of Elliptic Jets," European Turbulence Conference, Berlin, August 30-Sept. 2, (1988).

83. Ishii, K., Hussain, F., Kuwahara, K.,and Liu, C.H., "The Dynamics of Vortex Rings in an Unbounded Domain," European Turbulence Conference, Berlin, August 30-Sept. 2, (1988).

84. Kerr, R.M. and Hussain, F., "Simulation of Reconnection and Helicity," IUTAM Congress, Grenoble, August 21-27, (1988).

85. Matsumoto N., Shirayama, S., Kuwahara, K., and Husain, F., "Computational Study of Taylor-Couette Flow," European Turbulence Conference, Berlin, Aug. 30-Sept. 2, (1988).

86. Hussain, F., Metcalfe, R.W., and Witte, L.C., "Experimental and Numerical Studies of Combusting Jets," 25th JANNAF Meeting, Huntsville, Ala, Oct. 24-28, (1988).

87. Bridges, J. and Hussain, F., "Evolution of Noncircular Vortex Rings," Bull. Am. Phys. Soc. **33**, p. 2306, (1988).

88. Grinstein, F.F., Oran, E.S. and Hussain, F., "Three-Dimensional Vortical Structures and Mixing Enhancement in Subsonic Free Plane Jet Flows," Bull. Am. Phys. Soc. **33**, p. 2254, (1988).

89. Melander, M.V. and Hussain, F., "Bridging: the Essence of Viscous Vortex Reconnection," Bull. Am. Phys. Soc. **33**, p. 2306, (1988).

90. Moser, R., Colonious, T., Hussain, F., Rogers, M., and Moin, P., "Vorticity Dynamics in a Time-Developing Mixing Layer," Bull. Am. Phys. Soc. **33**, p. 2255, (1988).

91. Virk, D., Kerr, R.M., and Hussain, F., "High Resolution Simulation of Cut-and-Connect of Vortex Tubes," Bull. Am. Phys. Soc. **33**, p. 2306, (1988).

92. Mansour, N.N., Hussain, F., and Buell, J.C., "Computation of Subharmonic Resonance in a Spatial Mixing Layer," Bull. Am. Phys. Soc. **33**, p. 2297, (1988).

93. Daggs, C.J., Kiehn, R.M., and Hussain, F., "The Helicity Tensor: a Topological Descriptor of Coherent Structures," Bull. Am. Phys. Soc. **33**, p. 2303, (1988).

94. Broze, J.G., Hussain, F., and Buell, J.C., "Chaos in a Two-Dimensional Mixing Layer," Bull. Am. Phys. Soc., p. 2267, (1988).

95. Hussain, F., Metcalfe, R.W., Grinstein, F.F., and M Hayakawa, "Topology and Dynamics of Coherent Structure in a Plane Mixing Layer," Organized Structures and Turbulence in Fluid Mechanics, Grenoble, France, Sept. 18-21, (1989).

96. Husain, H.S. and Hussain, F., "Dynamics of Excited and Unexcited Elliptic Jets," 5th European Physical Society Liquid State Conference, Moscow, Oct. 16-21, (1989).

97. Metcalfe, R.W. and Hussain, F., "Large Scale Structures in Teaching Mixing Layers," 5th European Physical Society Liquid State Conference, Moscow, Oct. 16-21, (1989).

98. Virk, D., Kerr, R.M., and Hussain, F., "Simulation of Compressible Cut-and-Connect of Vortices," Bull. Am. Phys. Soc. **34**, p. 2295, (1989).

99. Bridges, J. and Hussain, F., "Simultaneous Multi-point Measurements of Far-field Sound of Controlled Jets," Bull. Am. Phys. Soc. **34**, pg. 2336, (1989).

100. Metcalfe, R.W., Hussain, F., and Lee, C.F., "The Topology of Vortex Lines and Flame Sheets in a Temporally Growing, Reacting Mixing Layer," Bull. Am. Phys. Soc., **34**, p. 2339, (1989).

101. Kunin, I. and Hussain, F., "Dynamics of Point Vortices in a Special Rotating Frame," Dynamics Days Texas, UT-Austin, Jan. 4-6, (1990).

102. Broze, G. and Hussain, F., "Feedback and Intermittency in Axisymmetric Jets," Dynamics Days Texas, UT-Austin, Jan. 4-6, (1990).

103. Xi, L. and Hussain, F., "Low Aspect Ratio Taylor-Couette Flow," Dynamics Days Texas, UT-Austin, Jan. 4-6, (1990).

104. Liu, T. and Hussain, F., "A Cusp Catastrophe in Jet Subharmonic Resonance," Dynamics Days Texas, UT-Austin, Jan. 4-6, (1990).

105. Berdichevsky, V., Kunin, I., and Husain, F., "Thermodynamics of Vortices," Bull. Am. Phys. Soc. **35**, p. 2240, (1990).

106. Melander, M.W. and Hussain, F., "Vortex Core Dynamics," Bull. Am. Phys. Soc. **35**, p. 2226, (1990).

107. Jenkinson, J.P. and Hussain, F., "Transitional Pipe Flow as Dynamical System," Bull. Am. Phys. Soc., **35**, p. 2242, (1990).

108. Broze, G. and Hussain, F., "Spatiotemporal Dynamics of Transitional Jets," Bull. Am. Phys. Soc. **35**, p. 2242, (1990).

109. Goldshtik, M., Hussain, F,. and Shtern, V., "On Instability of Potential Vortices in a Viscous Fluid and Unusual Features of New Solutions," Bull. Am. Phys. Soc. **35**, p. 2248, (1990).

110. Bridges, J. and Hussain, F., "Direct Verification of Aeroacoustic Theory in Jet Noise," Bull. Am. Phys. Soc. **35**, pg. 2263, (1990).

111. Peralta-Fabi, R. and Hussain, F., "Exact Solution for Axisymmetric Flows," Bull. Am. Phys. Soc. **35**, p. 2308, (1990).

112. Balint, J.-L., Wallace, J.M., and Hussain, F., "The Vortical Structure of the Axisymmetric Turbulent Jet," Third European Turbulence Conference, Stockholm, July, (1990).

113. Jenkinson, J.P. and Hussain, F., "Feedback in an Open Flow System: Dynamics of Transitional Flows in Long Pipes," Dynamics Days Texas, Houston, Jan. 5-7, (1991).

114. Broze, G. and Hussain, F., "Simple Model for Transitional Free Shear Flows," Dynamical Days Texas, Houston, Jan. 5-7, (1991).

115. Kunin, I., Hussain, F., Prishepionak, S., and Zhou, Z. "Dynamics of Point Vortices in Centroidal Frames," Dynamics Days Texas, Houston, Jan 5-7, (1991).

116. Bridges, J. and Hussain, F., "Contribution of Nozzle-induced Dipole to Jet Engines," Bull. Am. Phys. Soc. **36**, p. 2667, (1991).

117. Shtern, V. and Hussain, F., "Azimuthal Instability of Marangoni Convection Driven by a Point Surface Source," Bull. Am. Phys. Soc. **36**, p. 2713, (1991).

118. Virk, D. and Hussain, F., "Initial Condition for Simulations of Compressible Vortex Interactions," Bull. Am. Phys. Soc. **36**, p. 2716,(1991).

119. Broze, G. and Hussain, F., "Chaotic Attractors and Hysteresis in a Partially Open Flow," Bull. Am. Phys. Soc. **36**, p. 2620, (1991).

120. Melander, M.V. and Hussain, F., "Viscous Generation of Helicity, and non-trivial Topology of Vortex Lines in Coherent Structures," Bull. Am. Phys. Soc., **36**, p. 2670, (1991).

121. Shtern, V. and Hussain, F., "Azimuthal Instability of Divergent Flows," Dynamic Days in Texas, Austin, Jan 8-11, (1992).

122. Broze, G. and Hussain, F., "Chaos and Hysteresis in 'Open' Flow, " Dynamic Days in Texas, Austin, Jan. 8-11, (1992).

123. Shtern, V. N. and Hussain, F. "Initial Instability of Divergent Flows," 13th Int'l Congr. Theor. and Applied Mech., Haifa, Israel., (1992).

124. Shtern, V., Goldshtik, M., and Hussain, F., "Hysteric Vortex Breakdown," Bull. Am. Phys. Soc. 37, p. 1707, (1992).

125. Goldshtik, M. and Hussain, F., "Stagnation Zone Theory and Vortex Breakdown," Bull. Am. Phys. Soc. 37, p. 1707, (1992).

126. Liu, D. D. and Hussain, F., "Simulation of 3D Particle Field Holography and Direct Hologram Analysis," Bull. Am. Phys. Soc. 37, p. 1791, (1992).

127. Meng, H. and Hussain, F., "Intrinsic Speckle Limitations and Signal-to-Noise Ratio in Holographic Particle Velocimetry (HPV) Based on In-line Holography," Bull. Am. Phys. Soc. 37, p. 1792, (1992).

128. Simmons, S. and Hussain, F. "Off-axis Holography for Holographic Particle Velocimetry," Bull. Am. Phys. Soc. 37, p. 1791, (1992).

129. Broze, G. and Hussain, F. "Effects of Noise in periodic and Chaotic Attractors in Forced Jets," Bull. Am. Phys. Soc. 37, p. 1807, (1992).

130. Schoppa, W., Metcalfe, R. W., and Hussain, F., "The Helical Pairing Instability -- An Alternative 3D Evolution of a Plane Mixing Layer," Bull. Am. Phys. Soc. 37, p. 1801, (1992).

131. Park, K., Metcalfe, R. W., and Hussain, F., "Effects of Coherent Structures in an Incompressible Reacting Shear Layer," Bull. Am. Phys. Soc. 37, p. 1801, (1992).

132. Shtern, V. and Hussain, F., "Internal Instability of Divergent Flows," 18th ICTAM, Haifa, Israel, p. 133, August 22-28, (1992).

133. Hussain, F. and Metcalfe, R. "Chemically Reacting Free Shear Flows," NAS Technical Summaries, p. 51, (1992).

134. Hussain, F. and Melander, M. "Vortex Reconnection and Coherent Structure Dynamics," NAS Technical Summaries, p. 52, (1992).

135. Goldshtik, M., Husain, H. S., and Hussain, F., "Paradoxical Species Separation Phenomenon," 18th ICTAM, Haifa, Israel, p. 63, August 22-28, (1992).

136. Park, K.-P., Metcalfe, R., and Hussain, F. "Role of Coherent Structures in Flame Quenching in Reacting Mixing Layers," Bull. Am. Phys. Soc. **38**, p. 2213-2214, (1993).

137. Julin, E., Metcalfe, R., and Hussain, F. "Numerical Treatment of Mass Action Term in Pseudospectral Calculations of Chemically Reacting Flows," Bull. Am. Phys. Soc. **38**, p. 2214, (1993).

138. Husain, H., Goldshtik, M., and Hussain, F. "Striking Phenomena in a Rotating Can," Bull. Am. Phys. Soc. **38**, p. 2273, (1993).

139. Goldshtik, M., Hussain, F., and Shtern, V. "Rudiments of a theory of structural turbulence," Bull. Am. Phys. Soc. **38**, p. 2296, (1993).

140. Shtern, V. and Hussain, F. "Jump Transitions in Swirling Jets," Bull. Am. Phys. Soc. **39**, p. 1972, (1994).

141. Meng, H. and Hussain, F. "Instantaneous 3D Measurement of Vortical Flows by Holographic Particle Velocimetry," Bull Am. Phys. Soc. **39**, p. 1875, (1994).

142. Menon, S. and Hussain, F. "Vorticity and Helicity Statistics in a Mixing Layer," Bull Am. Phys. Soc. **39**, p. 1966, (1994).

143. Broze, G. and Hussain, F. "Spatial Coupling Measurements in Inhomogeneous Flows," Bull Am. Phys. Soc. **39**, p. 1843, (1994).

144. Goldshtik, M. and Hussain, F. "Some Intriguing Features of Axisymmetric Jets," Bull Am. Phys. Soc. **39**, p. 1950, (1994).

145. Narayanan, S. and Hussain, F. " Spatiotemporal Dynamics in a Forced Plane Mixing Layer," Bull Am. Phys. Soc. **39**, p. 1843, (1994).

146. Metcalfe, R., Schoppa, W., Park, K., and Hussain, F. "The Potential for Mixing Enhancement in a Free Shear Layer Through Core Dynamics Instability," Bull. Am. Phys. Soc. **39**, p. 1895, (1994).

147. Meng, H. and Hussain, F. "A New Technique of Holographic Particle Velocimetry for 3D Flow Field Measurement," Bull. Am. Phys. Soc. **40**, p. 2000, (1995).

148. Shtern, V. and Hussain, F. "Control of Vortex Breakdown," Bull. Am. Phys. Soc. **41**, p. 1764, (1996).

149. Borrisov, A., Shtern, V., and Hussain, F. "Analytical Models for Complex Swirling Flows," Bull. Am. Phys. Soc. **41**, p. 1787, (1996).

150. Roy, S., Narayanan, S., and Hussain, F. "A New Method to Analyze Spatiotemporal Dynamics in Open Flows using Multiple Sensors," Bull. Am. Phys. Soc. **42**, p. 2131, (1997).

151. Pradeep, D.S., Schoppa, W., and Hussain, F. "Core Dynamics Instability of a Vortex in Shear: A Prototypical Cascade Mechanism," Bull. Am. Phys. Soc. **42**, p. 2166, (1997).

152. Schoppa, W. and Hussain, F. "New Large-Scale Control Strategies for Turbulent Boundary layers," Bull. Am. Phys. Soc. **42**, p. 2265, (1997).

153. Narayanan, S. and Hussain, F. "A New Chaos Control Strategy for Open Flows: The Circular Jet," Bull. Am. Phys. Soc. **42**, p. 2265, (1997).

154. Schoppa, W. and Hussain, F. "Dynamics of Near-Wall Longitudinal Vortices in a Fully Turbulent Boundary Layer," 13th USNCTAM, p. WK1, Gainesville, Florida, Jun. 22-26, (1998).

155. Schoppa, W. and Hussain, F. "Dynamics of Near-Wall Coherent Structures and their Control for Drag Reduction in Turbulent Boundary Layers," Addendum to the Proceedings of the International Symposium on Seawater Drag Reduction, Newport, Rhode Island, Jul. 22-23, (1998).

156. Hussain, F. "Core dynamics instability of a vortex in shear: a physical-space cascade mechanism," Bull. Am. Phys. Soc., **43**, p. 2004 (1998).

157. Hussain, F. and Pradeep, D. S. "Transient Growth of perturbations in a columnar vortex," Bull. Am. Phys. Soc. **50**, p. 206 (2005).

158. Hussain, F. and Pradeep, D. S. "Nonlinear Evolution of Optimal Transient Growth Modes in a Vortex Column," Bull. Am. Phys. Soc., **51,** p. 104 (2006).

159. Ahmed, M. and Hussain, F. "Effect of ambient turbulence on the evolution of a counter-rotating vortex pair," Bull. Am. Phys. Soc. **52**, p. 157 (2007).

160. Hussain, F. and Pradeep, D. S. "Mechanisms of core perturbation growth in vortex-turbulence interaction," Bull. Am. Phys. Soc. **52,** p. 18 (2007).

161. Hussain, F. and Duraisamy, K. "Mechanics of Viscous Vortex Reconnection," Bull. Am. Phys. Soc. **55**, (2010).

162. Stout, E. and Hussain, F. "Regenerative transient growth on a vortex column," Bull. Am. Phys. Soc. **55**, (2010).

163. She, Z., Chen, X., Wu, Y., and Hussain, F. "Understanding and quantifying wall-turbulence: a new closure approach," Bull. Am. Phys. Soc. **55**, (2010).

164. Chen, J., Pei, J., and She, Z. and Hussain, F. "Velocity-vorticity correlation structure in turbulent channel flow," Bull. Am. Phys. Soc. **55**, (2010).

165. Hickey, J. P., Hussain, F., and Wu, X. "Compressibility effects in planar wakes," Bull. Am. Phys. Soc. **55**, (2010).

166. Chen, X., She, Z.S., and Hussain, F. "A novel Lie-group analysis for wall-bounded turbulent flows," Bull. Am. Phys. Soc., **56**, 18, 12, (2011).

167. She, Z.S., Chen, X., Wu, Y., and Hussain, F. "Accurate determination of Karman constant and mean velocity in high Reynolds number turbulent pipe," Bull. Am. Phys. Soc., **56**, 18, 12. (2011).

168. van Rees, W., Hussain, F., and Koumoutsakos, P. "Cascade of vortex tube collisions at Re_Γ=10,000," Bull. Am. Phys. Soc., **56**, 18, 58, (2011).

169. Paredes, P., Nichols, J., Duraisamy, K., and Hussain, F. "Aeroacoustics of viscous vortex reconnection," Bull. Am. Phys. Soc., **56**, 18, 59, (2011).

170. Ni, Q., Hussain, F., Wang, J., and Chen, S. "Analysis of Reynolds number scaling for viscous vortex reconnection," Bull. Am. Phys. Soc., **56**, 18, 124, (2011).

171. Chen, J., Pei, J., She, Z.S., and Hussain, F. "Velocity-Vorticity Correlation Structure in Turbulent Channel Flow," Recent Progresses in Fluid Dynamics Research: Proceeding of the Sixth International Conference on Fluid Mechanics, pp. 87-89 (2011).

172. Hickey, J.P., Hussain, F., and Wu, X. "Transition of high speed planar wakes," *1000* Islands Fluid Mechanics Meeting, 2012 pp. 1-3 (2012).

173. Schlatter, P., Orlu, R., Li, Q., and Hussain, F. "On the near-wall vortical structures at high Reynolds numbers," Bull. Am. Phys. Soc., **57**, p. 17, 72 (2012).

174. She, Z.S., Chen, X., and Hussain, F. "Unified description of logarithmic profiles in a turbulent channel and pipe," Bull. Am. Phys. Soc., **57**, p. 17, 162 (2012).

175. Chen, X., Hussain, F., and She, Z.S. "Multi-layer prediction of mean velocity profiles in turbulent boundary layers," Bull. Am. Phys. Soc., **57**, p. 17, 163 (2012).

176. Stout, E., Hussain, F. "Regenerative centrifugal instability on a vortex column," Bull. Am. Phys. Soc., **57**, p. 17, 292 (2012).

177. Zhang, Y.S., Bi, W.T., She, Z.S., Hussain, F., and Li, Z.L. "Mach-number invariant mean velocity profile of compressible turbulent boundary layers," Bull. Am. Phys. Soc., **57**, p. 17, 214 (2012).

178. Zhang, Y.S., Bi, W.T., She, Z.S., and Hussain, F. "Quantifying Mach number similarity of compressible turbulent boundary layers," 23rd International Congress of Theoretical and Applied Mechanics (2012).

179. She, Z.S., Chen, X., and Hussain, F. "Universal Karman constant in canonical wall turbulence," Bull. Am. Phys. Soc., **58**, 19, 101 (2013).

180. Bi, W.T., Wu, B., Zou, H.Y., Li, X.L., Hussain, F., and She, Z.S., "A quantitative theory for the mean velocity distribution of compressible ramp flow," Bull. Am. Phys. Soc., **58**, p. 19, 112 (2013).

181. Chen, X., Hussain, F., and She, Z.S. "Variation approach to describe bulk flow of wall turbulence," Bull. Am. Phys. Soc., **58**, p. 19, 125 (2013).

182. Pol, S., Taylor, A., McKeon, D., Castillo, L., Perez, I., Beibei, R., Sheng, J., Westergaard, C., Burak, A., Araya, G., and Hussain, F. "Development of a Scaled Smart Wind Farm," Bull. Am. Phys. Soc., **58**, p. 19, 134 (2013).

183. Stout, E., Hussain, F. "Regenerative growth due to axial flow induced by vortex-turbulence interaction," Bull. Am. Phys. Soc., **58**, p. 19, 147 (2013)

184. Arenas, I., Carrasquillo, K., Leonardi, S., Araya, G., Hussain, F., and Castillo, L. "Modeling of the Gecko's skin microfibrillar structures using the Immersed Boundary method via DNS," Bull. Am. Phys. Soc., **58**, p. 19, 163 (2013).

185. Khan, Z., Kamyabi, N., Hussain, F., and Vanapalli, S. "Mechanical response of tumor cells flowing through a microfluidic capillary," Bull. Am. Phys. Soc., **59**, p. 1, 120, (2014).

186. Pol, S., Taylor, A., Bilbao, A., Doostalab, A., Novoa, S., Westergaard, C., Hussain, F., Sheng, J., Ren, B., Giesselmann, M., Glauser, M., and Castillo, L. "Field measurements in the wake of a model wind turbine," J. of Phys.: Conference Series, **524**, 1, p. 012175 (2014).

187. Lesage, A. C., Yao, J., Wijesinghe, N., Hussain, F., and Kouri, D. "Multi-Dimensional Inverse Acoustic Scattering Series Using the Volterra Renormalization of the Lippmann-Schwinger Equation," Society of Exploration Geophysicists, pp. 3118-3122 (2014).

188. Lesage, A. C., Yao, J., Hussain, F., and Kouri, D. "An Hermite Distributed Approximation Functional Fitting Method to Augment Reflection Data Down to Zero Frequency," Society of Exploration Geophysicists, (2014).

189. Chen, X., Hussain, F., and She, Z. "Symmetry-based Theory for Mean Velocities in the Flat Plate Turbulent Boundary Layer," Bull. Am. Phys. Soc. **59,** p**.** 20 (2014).

190. She, Z. S., Chen, X., and Hussain, F. "A Unified Theory for Wall Turbulence via a Symmetry Approach," Bull. Am. Phys. Soc. **59,** p**.** 20 (2014).

191. Weitao, B., Wu, B., Yousheng, Z., Hussain, F., and She, Z. "Multilayer Scaling of Mean Velocity and Thermal Fields of Compressible Turbulent Boundary Layer," Bull. Am. Phys. Soc. **59,** p**.** 20 (2014).

192. Araya, G., Castillo, L., and Hussain, F. "Evolution of the Reynolds Shear Stresses in Highly Accelerated Turbulent Boundary Layers," Bull. Am. Phys. Soc. **59,** p**.** 20 (2014).

193. Castillo, L., Guillermo, A., and Hussain, F. "Thermal Transport Phenomena in the Quasi-Laminarization Process of Turbulent Boundary Layers," Bull. Am. Phys. Soc. **59,** p**.** 20 (2014).

194. Hein, M., Hussain, F., and Huang, J. "Possible Domain Formation in PE/PC Bilayers Containing High Cholesterol," APS Meeting Abstracts, **1**, p. 48003 (2015).

195. Mao, Y., Hussain, F., and Huang, J. "Gramicidin Induce Local Non-Uniform Distribution of Lipids in Multi-Component Membrane Domains," APS March Meeting Abstracts, **1**, p. 1111P. (2015).

196. Yao, J., Lesage, A. C., Hussain, F., and Kouri, D. J. "One Dimensional Acoustic Reflection Data Inversion Based on Distorted Born Iterative Method," SEG Technical Program Expanded Abstracts, Ed. R. V. Schneider, pp. 1472-1478 (2015).

197. Yao, J., Bodmann, B., Kouri, D. J., Lesage, A. C., and Hussain, F. "Data Partionning Method for Convergent Volterra Inverse Scattering Series," SEG Technical Program Expanded Abstracts, Ed. R. V. Schneider, pp. 1274-1279, (2015).

198. Yao, J., Lesage, A. C., Hussain, F., and Kouri, D. J. "Scattering Theory and Volterra Renormalization for Wave Modeling in Heterogeneous Acoustic Media," SEG Technical Program Expanded Abstracts, Ed. R. V. Schneider, pp. 3594-3600, (2015).

199. Castillo, L., Guillermo, A., and Hussain, F. "The Power Law and Log-law Behaviors of the Accelerated Thermal Turbulent Boundary Layer," Bull. Am. Phys. Soc., **60**, (2015).

200. Wu, B., Bi, W. T., She, Z. S., and Hussain, F. "A Symmetry Based Approach to Quantifying the Compressible Turbulent Boundary Layer," Bull. Am. Phys. Soc. **60**, (2015)

201. Hussain, F. "Fine-scale Turbulence Induced Axial Flow and Instability of a Vortex Column," Bull. Am. Phys. Soc., **60**, (2015).

202. Zou, H.Y., Chen, X., Bao, Y., and Hussain, F. "Quantifying Rayleigh-Benard Convection via a Symmetry Approach," Bull. Am. Phys. Soc., **60**, (2015).

203. Stout, E., and Hussain, F. "Late Time Vortex Dynamics for a Coherent Structure Interacting with Fine-Scale Turbulence," Bull. Am. Phys. Soc., **60**, (2015).

204. Zhong, Q., Hocut, C., and Hussain, F. "Mixing Induced by Colliding Gravity Currents," Bull. Am. Phys. Soc., **60**, (2015).

205. Bi, W. T., Wu, B., She, Z. S., and Hussain, F. "Geometric Invariance of Compressible Turbulent Boundary Layers," Bull. Am. Phys. Soc., **60**, (2015).

206. She, Z. S., Chen, X., Zou, H., and Hussain, F. "Improved Engineering Models for Turbulent Wall Flows," Bull. Am. Phys. Soc., **60**, (2015).

207. Chen, X., Hussain, F., and She, Z. S. "A Multi-Layer Description of Reynolds Stresses in Canonical Wall Bounded Flows," Bull. Am. Phys. Soc., **60**, (2015).

208. Bryson, C., Hussain, F., and Barhorst, A. "Effect of Blade Loading and Rotor Speed on the Optimal Aerodynamic Performance of Wind Turbine Blades," Bull. Am. Phys. Soc., **60**, (2015).

209. Khan, Z., Kamyabi, N., Hussain, F., and Vanapalli, S. "Passage Times of Confined Cancer Cells and Deformable Particles Flowing Through a Microfluidic Channel," Bull. Am. Phys. Soc., **61**(2) (2016).

210. Yao, J., Kouri, D., Zhu, T., Hussain, F. "Solving Fractional Laplacian Viscoacoustic Wave Equation Using Hermite Distributed Approximating Functional Method," SEG Technical Program Expanded Abstracts, pp. 3966-3971 (2016)

211. Thomas, F., Corke, T., Hussain, F., Duong, A., McGowan, R., Jasinski, C., Simmons, D. "Turbulent Boundary Layer Drag Reduction by Active Control of Streak Transient Growth." Bull. Am. Phys. Soc., **61**(20) (2016).

212. Sirignano, W., Hussain, F. "Temporal Length-scale Cascade and Expansion Rate on Planar Liquid Jet Instability." Bull. Am. Phys. Soc., **61**(20) (2016).

213. Sirignano, W., Hussain, F. "Mechanisms, Role of Vorticity, and Time Scales for Planar Liquid Sheet Breakup." Bull. Am. Phys. Soc., **61**(20) (2016).

214. Castillo, R., Wang, Y., Pol, S., Swift, A., Hussain, F., Westergaard, C. "Wake Flow Control Using a Dynamically Controlled Wind Turbine." Bull. Am. Phys. Soc., **61**(20) (2016).

215. Zhong, Q., Hussain, F., Li, D.X. "Very-Large-Scale Coherent Motions in Open Channel Flows." Bull. Am. Phys. Soc., **61**(20) (2016).

216. Khan, Z., Santos, J., Hussain, F. "Nuclear Stiffness and Chromatin Condensation as Markers for Aggressive Prostate Cancer." Bull. Am. Phys. Soc., **62**(4) (2017).

217. Mao, X., Hussain, F. "Dynamics of Helical Vortices Behind a Wind Turbine in a Stratified Atmosphere." Bull. Am. Phys. Soc., **63** (2017).

218. Kamal, O., Hickey, J.P., Scalo, C., Hussain, F. "Evolution of solenoidal and dilatational perturbations in transitional supersonic and hypersonic boundary layers." Bull. Am. Phys. Soc., **63** (2017).

219. Ge, H., Hussain, F. "Numerical simulation of the electric field of a single DBD in vacuum." Bull. Am. Phys. Soc., **63** (2017).

220. Chen, X., Yao, J., Hussain, F. "Drag control of wall-bounded turbulent flows." Bull. Am. Phys. Soc., **63** (2017).

221. Yao, J., Hussain, F. "A new vortex definition for compressible and stratified flows." Bull. Am. Phys. Soc., **63** (2017).

222. Stout, E., Hussain, F. "Transient Growth on a High-Reynolds-number Oseen Vortex leading to Breakup." Bull. Am. Phys. Soc., **63** (2017).

223. Khan, Z., Santos, J., Vaz, N., Hussain, F. "Enhanced blebbing as a marker for metastatic prostate cancer." Bull. Am. Phys. Soc., **64** (2018).

224. Yao, J., Hussain, F. "Mach number effect on drag control via spanwise wall oscillation in wall-bounded turbulent flows." Bull. Am. Phys. Soc., **64** (2018).

225. Chen, X., Hussain, F., She, Z.S. "A symmetry approach to quantify wall turbulence: Reynolds stresses." Bull. Am. Phys. Soc., **64** (2018).

226. Pulletikurthi, V., Dharmarathne, S., Hussain, F., Castillo, L. "Relation of Large-scale motions with inlet blowing perturbations in turbulent wall-bounded flows." Bull. Am. Phys. Soc., **64** (2018).

227. Stout, E., Hussain, F. "Breakup and Reorganization of a Turbulent Batchelor Vortex." Bull. Am. Phys. Soc., **64** (2018).

228. Hussain, F., Yao, J. "Evidence of Physical turbulence cascade mechanism via reconnection cascade scenario." Bull. Am. Phys. Soc., **64** (2018).

229. Mao, X., Deng, J., Hussain, F. "Locomotion of flexible filaments." Bull. Am. Phys. Soc., **64** (2018).

230. Bryson, C., Stout, E., Hussain, F. "Amplitude effects of initial perturbations on nonlinear transient growth dynamics for a vortex column." Bull. Am. Phys. Soc., **64** (2018).

231. Khan, Z., Hussain, F. "Shear stress increases acidic vesicles and proton pumps enhancing prostate cancer progression." Bull. Am. Phys. Soc., **65** (2019).

232. Daryan, H., Hussain, F., Hickey, J.P. "Thermodynamic Changes during Compressible Vortex Reconnection." IUTAM 2019 Symposium on Vortex Dynamics (2019).

233. Hussain, F., Yao, J. "Vortex Reconnection and Turbulence Cascade." IUTAM 2019 Symposium on Vortex Dynamics (2019).

234. Stout, E., Hussain, F. "New Studies in Vortex Dynamics: Vortex-Turbulence Interaction, and Vortex Transition." IUTAM 2019 Symposium on Vortex Dynamics (2019).

235. Yao, J., Hussain, F. "Numerical study of polarized viscous vortex reconnection." Bull. Am. Phys. Soc., **65** (2019).

236. Chen, J., Li, S.Y., She, Z.S., Hussain, F. "Velocity-Vorticity Correlation Structure (VVCS) in Transitional Compressible Turbulent Boundary Layer." Bull. Am. Phys. Soc., **65** (2019).

237. Bryson, C., Hussain, F. "Turbulent boundary layer drag recovery downstream of spanwise wall oscillation." Bull. Am. Phys. Soc., **65** (2019).

238. Stout, E., Mao, X., Hussain, F. "Avalanche of drag-inducing near-wall vortices due to streak transient growth in turbulent channel flow." Bull. Am. Phys. Soc., **65** (2019).

239. Chen, X., Yao, J., Hussain, F. "Reynolds number effect on drag control via spanwise wall oscillation in turbulent channel flows." Bull. Am. Phys. Soc., **65** (2019).

240. Sirignano, W., Zandian, A., Hussain, F. "Vorticity dynamics for a spatially developing liquid jet within a co-flowing gas." Bull. Am. Phys. Soc., **65** (2019).

INVITED PRESENTATIONS

Invited Lectures (including keynotes)

1. "The Mechanics of a Perturbation Wave in Turbulent Shear Flow," Boeing Symposium on Turbulence, Boeing Scientific Research Laboratories, Seattle, June (1969).
2. "Mechanics of Pulsatile Flows of Relevance to the Cardiovascular System," NATO Advanced Institute on Cardiovascular System, Houston, October 6-17, (1975).
3. "Coherent Structures in Jet Flows," NASA Workshop on Flow Noise Generation, Langley Research Center, Hampton, Virginia, March 29-31, (1977).
4. "Controlled Perturbation of Circular Jets," Symposium on Turbulence, Berlin, August 1-5, (1977).
5. "Initial Condition Effect on Free Turbulent Shear Flows," Symposium on Turbulence, Berlin, August 1-5, (1977).
6. "The Free Shear Layer Edgetone and Instability Measurements," Symposium on Turbulence, Berlin, August 1-5, (1977).
7. "Investigations of Coherent Structure in Free Turbulent Shear Flows," 6th Biennial Symposium on Turbulence, University of Missouri-Rolla, October 8-10, (1979).
8. "Perturbed and Unperturbed Turbulent Jets," International Conference on the Role of Coherent Structures in Modeling Turbulence and Mixing, Madrid, June 24-27, (1980).
9. "Conditional Sampling Technique to Test the Applicability of the Taylor Hypothesis for the Large-Scale Coherent Structures," Euromech Colloquium on Hot Wire, Hot-Film and Conditional Sampling, Ecole Centrale Lyon, Lyon, July 2-5, (1980).
10. "Control of Coherent Structures," Workshop on Compliant Coating Drag Reduction, National Academy of Science, Washington, D.C., September 16-17, (1980).
11. "The Dominant Coherent Structure of the Circular Jet," ICHMT-IUTAM Joint Symposium on Heat and Mass Transfer and the Structure of Turbulence, Dubrovnik, October 6-10, (1980).
12. "Visualization Study of the Axisymmetric Mixing Layer," ICHMT-IUTAM Joint Symposium on Heat and Mass Transfer and the Structure of Turbulence, Dubrovnik, October 6-10, (1980).
13. "The Role of Coherent Structures in Free Turbulent Shear Flows," First Asian Congress on Fluid, December 8-13, (1980).
14. "The Preferred-Mode Coherent Structure of the Jet," IUTAM Symposium on Unsteady Turbulent Shear Flows, Toulouse, France, May 5-8, (1981).

15. "Acoustic Control of a Free Shear Layer: Theory vs. Experiment," Euromech Colloquium 142 on Acoustics of Turbulent Flows, Ecole Centrale de Lyon, France, September 23-25, (1981).
16. "Large-Scale Coherent Structures: What, Why and How?" 18th Annual Meeting, Society of Engineering Science, Brown University, September 2-4, (1981).
17. "The Self-Preserving Region of the Axisymmetric Jet," Workshop on Jet Flow, Stanford University, November 20-21, (1981).
18. "Coherent Structures - Reality and Myth," 34th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Naval Post-Graduate School, Monterey, California, November 22-24, (1981).
19. "What is a Coherent Structure in Turbulence?" Invited Panel Session at the 35th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Rutgers University, (1982).
20. "The Phenomenon of Self-Excited Jet and Its Turbulence and Noise Characteristics," 19th Annual Meeting, Society of Engineering Science, University of Missouri-Rolla, October 27-29, (1982).
21. Large-scale Organized Motions in Jets and Shear Layers," International Symposium on Recent Advances in Aerodynamics and Aeroacoustics, Stanford University, August 22-26, (1983).
22. "Coherent Structures in Turbulent Shear Flows," IUTAM Symposium on Turbulence and Chaotic Phenomena in Fluids, Kyoto University, Kyoto, Japan, September 5-10, (1983).
23. "Entanglement of Two Vortex Filaments," IUTAM Symposium on Turbulence and Chaotic Phenomena in Fluids, Kyoto University, Kyoto, Japan, September 5-10, (1983).
24. "Observations on Transition of the Unsteady Pipe Flow," Second Asian Congress of Fluid Mechanics, Beijing, China, October 25-29, (1983).
25. "Controlled Excitation of Jets and Shear Layers," Symposium on the Use of Artificial Excitation to Control Flows by Manipulating Large Scale Structures, San Antonio, June 17-21, (1984).
26. "Coherent Structures in Turbulent Shear Flows," The Freeman Lecture at the Winter Annual Meeting of ASME, New Orleans, December 11-14, (1984).
27. "Measurements of Large Scale Organized Motions in Turbulent Flows," 2nd Joint ASCE/ASME Mechanics Conference, Albuquerque, New Mexico, June 23-26, (1985).
28. "Modern Measurement Techniques of Large-scale Coherent Structures," 1986 Aerospace Sciences Meeting, Reno, Nevada, Jan. 6-9, (1986).
29. "Organized Structures in Free Shear Flows," Colloquium on Free Shear Flows/Propulsion, 1986 Aerospace Sciences Meeting, Reno, Nevada, Jan 6-9, (1986).
30. "Coherent Structures and Turbulence," IUTAM Symposium on Fluid Mechanic in the Spirit of G.I. Taylor, Cambridge, UK, 24-28 March, (1986).

31. "Physics of the Mixing Layer: Experiments and Direct Numerical Simulations," (coauthored by R.W. Metcalfe and S. Menon), IUTAM Symposium on Fluid Mechanics in the Spirit of G.I. Taylor, Cambridge University, 24-28 March, (1986).
32. "Recombination of two vortex filament," (coauthored by R. Takaki) Third Asian Congress of Fluid Mechanics, Tokyo, Japan, September 1-5, (1986).
33. "Coherent Structures: Their Measurements and Applications," Fifth Beer-Sheva International Seminar on MHD-Flows and Turbulence, Jerusalem, Israel, March 2-6, (1987).
34. "Coherent Structures in Turbulent Flows," Symposium on Prospects for Turbulence Research, National Center for Atmospheric Research, Boulder, Colorado, June 22-26, (1987).
35. "Turbulent Flow Structures Educed from Direct Numerical Simulation on Supercomputers," Second Nobeyama Workshop on Fluid Dynamics and Supercomputers, Noveyama, Japan, September 7-9, (1987).
36. "Coherent Structures and Turbulence Management in Free Turbulent Shear Flow," International Symposium on Transport Phenomena in Turbulent Flows, Univ. of Tokyo, October 25-29, (1987).
37. "What have we learned about turbulence from coherent structures?" Progress in Boundary Layers and Turbulence Research, Tokyo, April 9, (1988).
38. "Simulation of Noncircular Vortices," (with J.E. Bridges) 12th World Congress on Scientific Computation, Paris, July 18-22, (1988).
39. "Direct Numerical Simulation of Viscous Vortex Interactions," Commonwealth Specialists' Meeting on Computational Fluid Dynamics, Bangalore, INDIA, Dec. 5-10, (1988).
40. "Whither Coherent Structures?" Turbulence at Crossroads, Mathematical Science Institute Cornell University, March 22-24, (1989).
41. “Role of Vortex Reconnection in Turbulence Cascade,” 1989 Newport Conference on Turbulence, Brown University, June 11-15, (1989).
42. “Vortex Reconnection,” IUTAM Symposium on Topological Fluid Motion, Cambridge U., Aug. 13-19, (1989).
43. “Supercomputer Simulation of Vortex Dynamics,” 3rd Nobeyama Workshop on Supercomputing and Experiments Sept 11-13, (1989).
44. “Vortex Dynamics and Reconnection,” 5th European Liquid State Conference, Moscow, October 16-21, (1989).
45. “Computation of Vortex Dynamics and Turbulence,” Soviet-American Conference on Computational Fluid Dynamics, Tashkent, USSR, Oct. 22-28, (1989).
46. “Role of Coherent Structures in Turbulent Shear Flows,” AIChE Annual Meeting, San Francisco, November 5-10, (1989).

47. “Cut-and-Connect of Antiparallel Vortex Tubes,” IUTAM Symposium on Topological Fluid Motion, Cambridge Univ., Aug. 13-18, (1989).

48. “Topology of Coherent Structures and Flame Sheets in Reacting Mixing Layers,” IUTAM Symposium on Topological Fluid Motion, Cambridge Univ., Aug. 13-18, (1989).

49. “Reconnection of Two Vortex Rings,” IUTAM Symposium on Topological Fluid Motion, Cambridge Univ., Aug. 13-18, (1989).

50. “Effects of Incompressible and Compressible Vortex Reconnection,” IUTAM Symposium on Topological Fluid Motion, Cambridge Univ., Aug. 13-18, (1989).

51. “Helicity Associated with Flow around Fluid Lumps and with Inhomogeneous Turbulence,” IUTAM Symposium on Topological Fluid Motion, Cambridge Univ., Aug. 13-18, (1989).

52. "Vortex Reconnection, Cascade and Mixing in Turbulent Flows," Sixth Beer-Sheva International Seminar on MHD and Turbulence, Jerusalem, Israel, Feb. 25-March 3, (1990).

53. "Coherent structures in Bounded and Free Shear Flows," 11th US National Congress of Applied Mathematics, U. of Arizona, Tuscon, May 24-28, (1990).

54. "Large-Scale Structures in Turbulent flows," International Symposium on Generation of Large-Scale Structures in Continuous Media, Perm-Moscow, June 11-2, (1990).

55. "Vortex Reconnection and Turbulence Mixing," 1990 AMS-SIAM Summer Seminar in Applied Mathematics: Vortex Dynamics and Vortex Methods, U. of Washington, Seattle, June 18-29, (1990).

56. "Organized Motions in Jets and Mixing Layers," IUTAM Symp on Separated Flows and Jets, Novosibirsk, July 9-13, (1990).

57. "Large-Scale Structures in Turbulence: A Challenge to Theorists," International Workshop on Novel Experiments and Data Processing for Basic Understanding of Turbulence, Ibaraki, Japan, October 8-10, (1990).

58. “Interplay between Experiments and CFD in Vortex and Turbulent Flows,” Japan Society of Fluid Dynamics Symposium on CFD, October 11, (1990).

59. "Understanding Turbulence via Vortex Dynamics," The Lumley Symposium: Recent Developments in Turbulence, Hampton, VA November 13-14, (1990).

60. "Understanding Cascade Mechanisms through Vortex Dynamics," Workshop on Dynamics of Structures and Intermittencies in Turbulence," Arizona State University, Phoenix, May 20-24, (1991).

61. "Helical Wave Decomposition and Self-Organization in Turbulence," 4th Nobeyama Workshop on Supercomputing and Experiments in Fluid Dynamics, Nobeyama, Japan, Sept. 3-5, (1991).

62. "New Experimental Studies in Hydrodynamics," 4th Nobeyama Workshop on Supercomputing and Experiments in Fluid Dynamics, Nobeyama, Japan, Sept. 3-5, (1991).

63. "New Aspects of Vortex Dynamics," NATO Workshop, Institute of Theoretical Physics, Santa Barbara, Nov. 1-5, (1991).

64. "New Aspects of Vortex Dynamics by Numerical Simulation: Core Dynamics, Helical Wave Dynamics, and Vortex Fine-scale Turbulence Interaction," NATO Advanced Research Workshop: Vortex Flows and Related Numerical Methods, Grenoble - St. Pierre de Chartreuse, June 15-19, (1992).

65. "Understanding Turbulence via Vortex Dynamics: Some New Perspectives," The 5th Asian Congress of Fluid Mechanics, Taejon, Korea August 10-14, (1992).

66. "New Approaches to Vortex Dynamics: Core Dynamics, Helicity, Helical Waves, and Interaction with Fine-scale Turbulence," Thirteenth Symposium on Turbulence, Univ. of Missouri-Rolla. Sept. 21-23, (1992).

67. "Study of Coherent Structures via Vortex Dynamics: Core Dynamics, Helical Waves, and Interaction with Fine-scale Turbulence.' IUTAM Symposium: Eddy Structure Identification in Free Turbulent Shear Flows, Poitiers, France, Oct 12-14, (1992).

68. "New Perspectives on Vortex Dynamics: Core Dynamics, Helical Wave Decomposition and Interaction with Turbulence," 7th Beer-Sheva International Seminar on MHD and Turbulence, Jerusalem, Israel, Feb. 14-18, (1993).

69. "Holographic Particle Velocimetry: Prospects and Limitations," Fluids Engineering Division Meeting, ASME, Washington, D. C., June 20-24, (1993).

70. "Vortex reconnection, core dynamics and related turbulence physics," Euromech Symp. Vortex Dyn, Cortona, Italy, June 27-July 2, (1993).

71. "Subharmonic Resonance in Free Shear Layers," IUTAM Symposium on Nonlinear Instability of Nonparallel Flows, Clarkson U., July 25-30, (1993).

72. "A new mechanism for transition in free shear layers: vortex core dynamics," Symposium on Developments in Fluid Dynamics and Aerospace Engineering, Bangalore, India, Dec. 9-10, (1993).

73. "Topological Fluid Mechanics and Vortex Reconnection," Turbulence as a Problem in Physics, Nehru Center for Advanced Scientific Research, Bangalore, India, Dec. 13-18, (1993).

74. "Chaos in Spatially Developing Mixing Layers," Turbulence as a Problem in Physics, Nehru Center for Advanced Scientific Research, Bangalore, India, Dec. 13-18, (1993).

75. "Anomalous diffusion in fluid-particle mixtures," Turbulence as a Problem in Physics, Nehru Center for Advanced Scientific Research, Bangalore, India, Dec. 13-18, (1993).

76. Six lectures on "Eddy Structure Identification Techniques for Free Turbulent Flows," International Center for Mechanical Sciences, Udine, Italy, May 23-27, (1994).

77. "Innovations in Holographic Particle Velocimetry," International Workshop on 3D PIV, Ford Motor Co., August 15-17, (1994).

78. "Developments in Holographic Particle Velocimetry, " NSF/DOE Workshop on Particulates and Fluids, Philadelphia, October 16-17, (1994).

79. "Core Dynamics Instability: A New Transition Mechanism in a Mixing Layer," Advances in Turbulence Research-1995, Pohang, Korea, March 27-29, (1995).

80. "Coherent Structures and Turbulence," Tani Memorial Lecture: Sixth Asian Congress of Fluid Mechanics, Singapore, May 22-26, (1995).

81. "Vortex Dynamics and Turbulence Physics," Sixth International Congress on CFD Lake Tahoe, Sept. 4-8, (1995).

82. "Core dynamics instability: a new transition mechanism in a mixing layer," Taylor Symposium, Soc. Engr. Sci. Annual Meeting, New Orleans, Oct. 30 - Nov. 2, (1995).

83. "Vortex Dynamics and Turbulence Physics," Soc. Engr. Sci. Annual Meeting, New Orleans, Oct. 30 - Nov. 2, (1995).

84. "Holographic Particle Velocimetry for Turbulent, Multiphase and Combustion Flows," 22nd National Conference on Fluid Mechanics and Fluid Power, Madras, India, Dec. 13-15, (1995).

85. "Vortex Liquid Piston Engine and some other Vortex Technologies," International Congress on Advances in Mechanical Engineering, Bangalore, India, Dec. 20-22, (1995).

86. "Dynamics of Coherent Structures in Near-Wall Turbulence," International Seminar on Fluid Mechanics Research, Dhaka, Bangladesh, Dec. 27-28, (1995).

87. "Advances in Holographic Particle Velocimetry," International Seminar on Fluid Mechanics Research, Dhaka, Bangladesh, Dec. 27-28, (1995).

88. "New Vortex Technologies," International Seminar on Fluid Mechanics Research, Dhaka, Bangladesh, Dec. 27-28, (1995).

89. "Role of Coherent Structures in Near-Wall Turbulence," Disquistiones Mechanicae, University of Illinois, Champaign-Urbana, Oct. 24-25, (1996).

90. "Vortex Dynamics & Turbulence Physics," Fluid Dynamics Lecture Series, Stanford University, Palo Alto, Feb. 4, (1997).

91. "Numerical Studies of Streamwise Vortices in a Turbulent Boundary Layer," 5th Nobeyama Workshop on High-Performance Computing in Fluid Dynamics, Nobeyama, Japan, May 13-15, (1997).

92. "Dynamics of Longitudinal Vortices in Near-Wall Turbulence," IUTAM Symposium on Simulation and Identification of Slender Vortices, Lyngby, Denmark, May 25-27, (1997).

93. "Genesis and Dynamics of Coherent Structures in Near-Wall Turbulence," Workshop on Turbulence Transport and Numerical Modeling , Los Alamos National Laboratory, June 4-7, (1997).

94. "Identification and Control of Near-Wall Vortices in Turbulent Boundary Layers," IUTAM Symposium on Slender Vortices, Aachen, Germany, Aug. 31 - Sept. 3, (1997).

95. "Dynamics and Nonlinear Modeling of Free Shear Flows," (with G. Broze) Cornell Workshop on POD-Galerkin Methods for the Dynamics and Control of Complex Flows, Ithaca, New York, Oct. 13-14, (1997).

96. "Low-Dimensional Modeling and Chaos Control in Open Shear Flows," (with S. Narayanan) Cornell Workshop on POD-Galerkin Methods for the Dynamics and Control of Complex Flows, Ithaca, New York, Oct. 13-14, (1997).

97. "A Robust Control Scheme for Drag Reduction in a Turbulent Boundary Layer," Cornell Workshop on POD-Galerkin Methods for the Dynamics and Control of Complex Flows, Ithaca, New York, Oct. 13-14, (1997).

98. "Genesis of Longitudinal Vortices in Near-Wall Turbulence," Second International Seminar on Fluid Mechanics and Heat Transfer, Dhaka, Bangladesh, Dec. 17-18, (1997).

99. "A New Strategy for Drag Reduction in Turbulent Boundary Layers," 24th National Conference on Fluid Mechanics and Fluid Power, Calcutta, India, Dec. 26-28, (1997).

100. "Genesis, Dynamics and Control of Coherent Structures in the Near-Wall Region of a Turbulent Boundary Layer," International Memorial Day for Prof. Carlo Ferrari, Torino, Italy, Apr. 3-4, (1998).

101. "Genesis, Dynamics and Control of Streamwise Structures in a Turbulent Boundary Layer," Turbulence: Challenges for 21st Century, Los Alamos, New Mexico, May 18-21, (1998).

102. "Dynamics of Near-Wall Longitudinal Vortices," 13th U.S. National Congress of Theoretical and Applied Mechanics, Gainesville, Florida, Jun. 22-26, (1998).

103. "Genesis, Dynamics and Control of Coherent Structures in Fully Developed Near-Wall Turbulence" (Plenary Lecture), 29th AIAA Fluid Dynamics Conference, Albuquerque, New Mexico, Jun. 15-18, (1998).

104. "Numerical Study of Dynamics and Control of Coherent Structures near the Wall of a Turbulent Boundary Layer," 16th International Conference on Numerical methods in Fluid Dynamics, Arcachon, France, July 6-10, (1998).

105. "Dynamics and Control of Longitudinal Vortices near the wall of Fully Developed Turbulent Boundary Layers," 3rd International Workshop on Vortex Flows, Toulouse, France, Aug. 24-27, (1998).

106. "Dynamics and Control of Near-Wall Coherent Structures," IUTAM Symposium on Mechanics of Passive and Active Flow Control, Gottingen, Germany, Sept. 7-11, (1998).

107. "Genesis and Dynamics of Near-wall Coherent Structures and their Control for Drag Reduction," Hokkaido Turbulence Mini-Symposium, Sapporo, Japan, Oct. 08, (1998).

108. "Genesis and Dynamics of Near-wall Coherent Structures in Turbulent Boundary Layers and their Control for Drag Reduction," International Workshop on Control in Fluid Mechanics and Combustion, Paris, France, Oct. 14-17, (1998).

109. "Core Dynamics Instability of a Vortex in Shear :A Physical-space Cascade Mechanism," (Fluid Dynamics Prize lecture), 51st Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Philadelphia, Nov. 22-24, (1998).

110. "Role of Core Dynamics in Transition to Turbulence," Workshop on Perspectives in the Understanding of Turbulent Systems, Isaac Newton Institute, Cambridge, UK, Jan. 13-22, (1999).

111. "Vortex Dynamics related to Fluid Turbulence," Workshop on Perspectives in the Understanding of Turbulent Systems, Isaac Newton Institute, Cambridge, UK, Jan. 13-22, (1999).

112. "Core Dynamics Instability of a Vortex in Shear: A Physical-Space Cascade Mechanism," Symposium on Turbulence Structure and Vortex Dynamics, Isaac Newton Institute, Cambridge, UK, Mar. 15-19, (1999).

113. "Genesis and Dynamics of Coherent Structures in Near-Wall turbulence, and their Control for Drag Reduction," Workshop on Breakdown to Turbulence, Isaac Newton Institute, Cambridge, UK, Mar. 22-31, (1999).

114. "Vortex Dynamics and Turbulence Physics," Sigma Xi Research Award Lecture, University of Houston, Feb. 19, (2000).

115. "Near wall coherent structures in a turbulent boundary layer: genesis and control," ASME Fluids Engineering Award Lecture, Boston, Jun. 13, (2000).

116. "Vortex Dynamics & Turbulence Physics," Cullimore Lecture, Department of Mechanical Engineering, New Jersey Institute of Technology, Apr. 15, (2002).

117. "Vortex Dynamics & Turbulence Physics," AIAA Fluid Dynamics Prize Lecture, St. Louis, June 25, (2002).

118. "Mechanism of Coherent Structure Generation in Near-Wall Turbulence," IUTAM Symposium, Tokyo, Oct. 18 (2002).

119. "Vortex Breakdown Control," Roshko Symposium, Blacksburg, Jun. 28 (2003).

120. "The Interaction Between a Coherent Structure and Turbulence," Symposium on Advances in Fluid Mechanics, Bangalore, Jul. 23, (2003).

121. "Regeneration Mechanism in Near-Wall Turbulence and Drag Reduction," 2nd BSME-ASME International Conference on Thermal Engineering, Dhaka, Bangladesh, Jan. 2, (2004).

122. "Vortex Dynamics and Turbulence: Some recent findings," Bangladesh Academy of Sciences Lecture, Dhaka, Bangladesh, Jan 17, (2004).

123. "Dreams and Realities: Reflections of a Bangladeshi," Dr. Engr. Alimullah Khan Memorial Lecture, 48th National Convention, The Institution of Engineers (Bangladesh), Dhaka, Bangladesh, Jan. 20, (2004).

124. "Mechanisms of interaction between a coherent structure and turbulence," Coherent Structures in Atmosphere and Ocean, National Center for Atmospheric Research, Boulder, CO, July 11-14, (2005).

125. "Transient Growth on a Vortex Column," 5th International Conference on Nonlinear Mechanics, Shanghai U, Shanghai, China, June 11-15, (2007).

126. "Regeneration Mechanism in the Near-Wall Region of a Turbulent Boundary Layer," Workshop on Multiphase Turbulence: Dust Storms, Erosion, Hurricanes and Tornadoes, Xi'an Jiaotong University, Xi'an, China, July 16-17, (2007).

127. "The role of transient Growth in Coherent Structure-Turbulence Interaction", Turbulence Physics and Control Workshop, Center for Turbulence Research, Stanford U., Sept 14 -15, (2007).

128. "Institute of Advanced Studies – New Challenge for Bangladesh," 60 Years of Engr. Education in Bangladesh, Bangladesh U of Engr & Tech, Dhaka, Dec 29-31, (2007).

129. "Coherent Structures, vortex-turbulence interaction and the looming airport capacity crisis," FLUID DAYS International Symposium, Jwaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India Dec. 31- Jan. 1, (2008).

130. "Mechanisms of core perturbation growth in vortex-turbulence interaction," ***The Keynote Lecture***, 12th Asian Congress of Fluid Mechanics, Daejeon, S. Korea, August 18-21, (2008).

131. "Nonlinear Transient Growth in a vortex Column," ***FD Sectional Lecture***,2007

132. **ICTAM 2008,** Adelaide, Australia, Aug 24-29, (2008).

133. "Mechanisms of Transient Growth in a stable vortex column," IUTAM Symposium: 150 Years of Vortex Dynamics, Tech U Denmark, Copenhagen, Oct. 13-16, (2008).

134. "Institute of Advanced Studies – the challenge of the future", Presidential Lecture, Auburn University, speaker introduced and lecture moderated by Univ President, Jay Gouge. November 14, (2008).

135. "The looming crisis in air traffic capacity – can vortex dynamics help?" ***Enzo Levi Seminar,*** **Mexican Physical Society**, held at National University of Mexico, Mexico City, April 23-24, 2009.

136. "Nonlinear Transient Growth on a Vortex Column", ***Keynote Lecture***, International Retreat on Vortex Aerodynamics, Peking University, Beijing,, August 21-23, (2009).

137. "Coherent Structure-Turbulence Interaction", International Symposium on Turbulence, Peking University, Beijing, Sept. 21-25, (2009).

138. "The looming crisis in air traffic capacity – what can vortex dynamics do?" The Seventh International Workshop on CFD, Tokyo University, Tokyo Sept. 23-24, (2009).

139. "Coupling between coherent structures and incoherent turbulence," NORDITA and Linne Flow Centre Workshop on Turbulent Boundary Layers , KTH, Stockholm, April 29-30, (2010).

140. "Rational Design of Nanoparticles for Cancer Drug Delivery," 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec. 17-21, (2010).

141. "Mechanics of Viscous Vortex Reconnection," 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec. 17-21, (2010).

142. "The Looming Crisis in Air Traffic Capacity and Some Other Fluids Challenges," Symposium of Scholars, Texas Tech University, Lubbock, TX, Sept. 2-4, (2015).

143. "Order within Disorder of Fluid Turbulence," IMA Conference on Turbulence, Waves and Mixing In Honour of Lord Julian Hunt's 75th Birthday, King's College, Cambridge, UK, July 6-8 (2016).

144. "Realistic Drag Control," Symposium on the Physics and Control of Turbulent Shear Flow, City College of New York, New York City, NY, July 10-11 (2017).

145. "Realistic large-scale control for drag reduction in turbulent boundary layer." G. I. Taylor Medalist Symposium at Society of Engineering Science Technical Meeting, Northeastern University, Boston, MA, July 25-28 (2017).

146. "New Results in Wall Turbulence: Symmetry Approach to Modeling and Drag Control Mechanism." Frontiers in Turbulence: KRS70 at Denver Symposium, Denver, Co, November 17-18 (2017). "Some Topics in Fluid Mechanics." Keynote Lecture at Symposium on Fluid Mechanics, Mechanical Engineering Department, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, December 26, (2017).

147. "Order within Disorder of Fluid Turbulence and other topics of interest" Special Guest Lecture, BUET Grand (50th) Reunion, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, January 5 (2018).

148. "Coherent structures and drag reduction." Opening Plenary Lecture, Control of Turbulent Friction Drag Conference, Beihang University, Beijing, China, August 1 (2018).

149. "Fundamentals of Vortex Dynamics." Tutorial for Ph.D. Students, Control of Turbulent Friction Drag Conference, Beihang University, Beijing, China, August 4 (2018).

INVITED SEMINARS (Recent; prior 200 not included)

201. Mechanical Engineering and Applied Mechanics, University of Michigan, October 6, 1997.

202. Dept. of Materials Science and Mechanics, Michigan State University, October 7, 1997.

203. Dept. of Nuclear Engineering and Engineering Physics, Univ. of Wisconsin, October 8, 1997.

204. Dept. of Mechanical Engineering, Northwestern University, October 9, 1997.

205. Dept. of Aerospace Engineering and Mechanics, University of Minnesota, October 10, 1997.

206. Joint Research Center of the E.C. ISIS Clean-Technology Sector Eng., EU, Ispra, Italy, March 31, 1998.

207. Dept. of Aerospace, Politecnico di Milano, Milan, Italy, April 1, 1998.

208. Dept. of Aerospace and Mechanical Engineering, University of Notre Dame, April21, 1998.
209. MMAE Dept., Illinois Institute of Technology, April 22, 1998.
210. Dept. of Theoretical and Applied Mechanics, University of Illinois at Urbana-Champaign, April 23, 1998.
211. School of Mechanical Engineering, Purdue University, April 24, 1998.
212. Aeronautical Information Technologies Division, NASA Ames Research Center, Moffet Field, California, June 12, 1998.
213. Dept. of Mechanical Engineering, Tokyo Institute of technology, Tokyo, Japan, October 06, 1998.
214. Dept. of Mechanical Engineering, Hokkaido University, Sapporo, Japan, October 07, 1998.
215. Dept. of Engineering, Cambridge University, February 4, 1999.
216. Dept. of Engineering, Cambridge University, February11, 1999.
217. Dept. of Applied Mathematics and Theoretical Physics, Cambridge University, February 19, 1999.
218. Department of Aeronautics, Imperial College, March 5, 1999.
219. European Union Joint Research Commission, Ispra, Italy, March 8, 1999.
220. Tokyo Institute of Technology, Japan, October 28, 1999.
221. Keio University, Japan, October 30, 1999.
222. Kyoto University, Japan, November 10, 1999.
223. Fluid Dynamics Seminar Series, Stanford University, February 8, 2000.
224. Institute for Theoretical Physics, University of California at Santa Barbara, February 10, 2000.
225. Dept. of Mechanical Engineering, University of California at Santa Barbara, October 30, 2000.
226. Dept. of Mechanical Engineering, Purdue University, November 2, 2001.
227. National Aerospace Laboratory, Tokyo, Japan, October 24, 2002.
228. Center for Turbulence Research, Stanford University, October 17, 2003.
229. Department of Mechanical Engineering, U Texas-Austin, December 9, 2005.
230. Department of Mechanical Engineering, MIT, March 14, 2006.
231. Division of Applied Mathematics, Brown University, March 15, 2006.
232. Department of Mech. & Aerospace Engineering, UC-Irvine, May 31, 2006.
233. Graduate Aeronautical Lab, CalTech, June 1, 2006.
234. Dept. of Mech. Engr., Johns Hopkins University, June 13, 2006.
235. Physics Dept. Colloquium, University of Houston, April 10, 2007
236. Dept. of Mechanics, Peking University, June 7, 2007.
237. Dept. of Aerospace Engr., Xinhua University, Beijing, June 8, 2007.

238. Dept. of Mechanical Engr., Virginia Tech, December7, 2007.
239. Dept. of Mechanical Engr., Islamic Univ. of Technology, Dhaka, December 25, 2007.
240. Bangladesh Academy of Science, Dhaka, Bangladesh, December 26, 2007.
241. Dept. of Aerospace Engr., Texas A&M University, September 25, 2008.
242. Dept. of Mech. Engr. & Mat. Sci., Rice University, October 1, 2008.
243. RISO National Lab, Copenhagen, Denmark, October 20, 2008
244. Center for Fluid Dynamics, Tech U Denmark, Copenhagen, October 21, 2008.
245. Department of Mechanical Engineering, Auburn University, November 13, 2008.
246. President's Lecture, moderated by Pres. J. Gogue, Auburn Univ., November 14, 2008.
247. GALCIT Seminar, Caltech, February 20, 2009.
248. Mechanical & Aerospace Sciences Department, USC, March 25, 2009.
249. Aerospace & Mechanical Engineering Dept., UCSD, April 6, 2009.
250. Mechanical Engineering Department, UCSB, April 15, 2009.
251. Mechanical & Aerospace Engineering Department, UCLA, May 1, 2009.
252. Petroleum Engineering Department, Texas A&M Univ., February 16, 2010.
253. Mechanical Engineering Department, Texas Tech University, April 1, 2010.
254. Aerospace & Mech. Engr. Dept., Ohio State Univ., April 23, 2010.
255. Aerospace Engr. & Engr. Mechanics Dept., UT-Austin, May 6, 2010.
256. Wind Energy Program, Texas Tech University, June 8, 2010.
257. MMM Division, NCAR Boulder Colorado, September 24, 2010.
258. Texas Tech University, October 2012.
259. Dept. of Mech. Engr., University of Puerto Rico at Mayagüez, March 21, 2013.
260. Dept. of Aero Engr., Iowa State University, October 17, 2013.
261. Dept. of Civil & Environmental Engr., Notre Dame University, March 31, 2015.
262. Dept. of Mech. & Industrial Engr., Northeastern University, November 13, 2015.
263. Dept. Aerospace Engineering, Tsinghua University, August 5. 2018
264. Dept. Agriculture Engineering, China Agricultural University, August 13, 2018.
265. Dept. Aerospace Engineering, Tsinghua University, July 5, 2019
266. Institute of Fluid Mechanics, Beijing University of Aeronautics and Astronautics, July 9, 2019.
267. School of Mechatronical Engineering, Beijing Institute of Technology, July 10, 2019.
268. Dept. Hydraulics, Tsinghua University, July 15, 2019.
269. Dept. Civil Engineering, Lanzhou University, Lanzhou China, July 19, 2019.

FUNDED RESEARCH (FH as the only PI unless indicated otherwise)

1. UH Research Initiation Grant, April 1972 to August 1972 -- $3,581.
2. NSF Research Initiation Grant, 1972 -- $16,000.
3. ONR, February 1 to September 1, 1973 -- $20,000.
4. ONR, October 1, 1973 to June 30, 1974 -- $22,500.
5. ONR, July 1, 1974 to June 30, 1975 -- $25,000.
6. NSF, September 2, 1974 to February 29, 1976 -- $42,700.
7. NASA, Langley Research Center, October 1 to June 30, 1975 -- $20,000.
8. ONR, January 1, 1975 to June 30, 1975-- $10,000.
9. NASA, Langley Research Center, July 1, 1975 to June 30, 1976 -- $33,672.
10. ONR, July 1, 1975 to September 30, 1976 -- $43,750.
11. NSF, September 1, 1975 to August 31, 1976 -- $67,500.
12. NSF, September 1, 1976 to August 31, 1977 -- $86,500.
13. ONR, October 1, 1976 to September 30, 1977 -- $37,700.
14. NSF, January 1, 1977 to December 31, 1977 -- $69,300.
15. NSF, September 1, 1977 to August 31, 1978 -- $111,000.
16. NASA, Langley Research Center, December 1, 1977 to November 30, 1978 -- $35,000.
17. ONR, October 1, 1977 to September 30, 1978 -- $42,000.
18. NASA, Langley Research Center, December 1, 1978 to November 30, 1979 -- $35,000.
19. ONR, October 1, 1977 to September 30, 1978 -- $44.610.
20. NASA, Ames Research Center, September 1, 1978 to June 30, 1979 -- $65,623.
21. NSF, March 1, 1979 to August 31, 1981 -- $302,382.
22. ONR, October 1, 1979 to September 30, 1980 -- $46,000.
23. NASA, Ames Research Center, September 1, 1979 to June 30, 1980 -- $748,089.
24. AFOSR (with L.S.G. Kovasznay), September 1, 1979 to August 31, 1980 -- $56,038.
25. NASA Langley Research Center, December 1, 1979 to November 30, 1980 -- $40,000.
26. NASA, Ames Research Center, August 1, 1980 to July 31, 1981 -- $78,089.
27. ONR, October 1, 1980 to September 30, 1981 -- $48,000.
28. NASA, Lewis Research Center, July 1, 1981 to June 30, 1981 -- $55,983.
29. NSF, April 1, 1981 to December 31, 1981 -- $15,006.
30. NASA, Ames Research Center, July 1, 1981 to December 31, 1981 -- $40,619.
31. NSF, November 15, 1981 to November 14, 1984 -- $401,539.
32. ONR, October 1, 1981 to November 14, 1982 -- $55,008.

33. ONR, October 1, 1982 to September 30, 1985 -- $255,000.
34. NASA Lewis Research Center, March 25, 1983 to March 24, 1986 -- $95,608.
35. DOD Research Equipment Grant, Aug 1984 - July 1986 -- $690,000 (UH Matching - $330,000).
36. NASA Johnson Space Center 1984 - 87 -- $45,000.
37. NSF, U.S. - JAPAN Joint Collaboration Grant, March 1, 1985 - August 31, 1987 -- $36,350.
38. NASA Lewis Research Center 1985-89 -- $72,000.
39. NASA Ames Research Center 1985-89 -- $72,000.
40. ONR, October 1, 1985 TO September 30, 1986 -- $90,000.
41. NASA Lewis Research Center June 15, 1985 to June 14, 1986 -- $53,375.
42. NASA Ames Research Center 1986-89 -- $54,000.
43. NASA Ames Research Center 1986 -- $15,000.
44. NASA Lewis Research Center, June 15, 1986 to June 14, 1987 -- $60,000.
45. ONR, October 1, 1986 to September 30, 1987 -- $90,000.
46. EPRI, January 31, 1987 to December 30, 1989 -- $150,000.
47. NASA Ames Research Center 1987 -- $21,860.
48. ONR, June 1, 1987 to May 31, 1989 - $382,818.
49. ONR, October 1, 1987 to September 30, 1988 -- $100,000.
50. DOE, December 16, 1987 to December 15, 1990 -- $394,000.
51. NASA Lewis Research Center, Oct. 1, 1987 to Sept. 30, 1988 -- $50,000.
52. Advanced Research Program, State of Texas, June 1, 1988 to Sept. 30, 1992 -- $415,100.
53. NASA Ames Research Center, April 1, 1988 to March 31, 1990 -- $54,259.
54. ONR, October 1, 1988 to September 30, 1989 -- $100,000.
55. NCAR, March 1, 1988 to February 28, 1991 -- $34,200.
56. ONR, October 1, 1989 to September 30, 1990 -- $110,000.
57. ONR, October 1, 1990 to September 30, 1991 -- $118,000.
58. ONR, June 1, 1989 to May 31, 1993 -- $780,000.
59. NSF, US-Japan Program, May 1, 1990 to April 30, 1992 -- $27,000.
60. ONR, October 1, 1991 to September 30, 1992 -- $127, 000.
61. NSF (SGER), December 1, 1991 to November 30, 1992 -- $50,000.
62. ARL (Pennsylvania State University), (co-PI: R. Metcalfe) August 25, 1992 to December 31, 1992 -- $74,858.
63. AFOSR, March 1, 1992 to February 28, 1995 -- $590,228.
64. NASA-JSC, September 1, 1992 to August 30, 1995 -- $66,500.
65. ONR, Turbulence, October 1, 1992 to September 30, 1993 -- $100,000.

66. NSF, August 15, 1992, to July 31, 1995 -- $316,060.
67. ONR, March 15, 1993 to March 14, 1996 -- $684,600.
68. ONR, April 1, 1993 to March 31, 1996 -- $326,652.
69. NSF, Equipment, July 7, 1994 to June 30, 1996 -- $80,000.
70. ARL (Pennsylvania State University), (co-PI: R. Metcalfe) Sept. 1993 - June 1995 -- $187,000.
71. DARPA, (co-PI: M. Goldshtik, A. Jirnov) May 15, 1993 - Nov. 31, 1995 -- $758,000.
72. ONR Turbulence, Oct. 1, 1993 to Sept. 30, 1994 -- $100,000.
73. ONR, Wavelets, (co-PI: V. Zimin) February 21, 1994 to February 20, 1996 -- $378,000.
74. AFOSR, April 1, 1995 to March 31, 1998 -- $200,000.
75. NSF, Equipment, (50% UH Matching) August 1, 1994 to July 31, 1996 -- $770,222.
76. ARO, Aug. 1, 1994 to July 31, 1996 -- $147,797.
77. ARP, State of Texas, (co-PI: C. Dalton) Jan. 1, 1996 to Aug. 31, 1998 -- $157,000.
78. ATP, State of Texas, (co-PI: M. Goldshtik) Jan. 1, 1996 to Aug 31, 1998 -- $133,000.
79. NSF, August 1, 1996 to July 31, 1999 -- $250,000.
80. Shell Interdisciplinary Scholars Program, (co-PI: A. Ignatiev, V. Zimin) April 1, 1997 to Dec. 31, 1998 -- $150,000.
81. AFOSR, April 1, 1997 to Dec 31, 1997 -- $150,000.
82. AFOSR, Jan 1,1998 to Mar. 31, 2000 -- $298,489.
83. NSF, June 1, 1999 to May 31, 2002 -- $260,000.
84. NASA-URETI, August 19, 2002 to August 18, 2005 -- $223,750.
85. NSF, June 1, 2006 - May 31, 2009 -- $300,000.
86. AIChE, (co-PI: M. Malmali, C.C. Chen) January 1, 2019 – December 31, 2019 -- $499,458

SUPERCOMPUTER GRANTS

1. 3000 Cray Y-MP hours 1992 (NASA-Ames).
2. 2000 Cray Y-MP hours 1993 (NASA-Ames).
3. 250 Cray C90 hours 1994 (NASA-Ames).
4. 200 Cray C90 hours 1995 (NASA-Ames).
5. 560 Cray C90 hours 1996 (NASA-Ames).
6. 200 Cray C90 hours 1998 (NASA- Ames).
7. 150 Cray C90 hours 1999 (NASA- Ames).

8. 100 SGI O2K hours 2000 (NASA-Ames).
9. 200 Cray C90 hours 2000 (NASA-Ames).

SOME UNIV of HOUSTON SERVICE ACTIVITIES

Department

Department Advisory Committee (1972-73, 1976-78).
Lab and Shop Committee (1972-74, 1975-).
Undergraduate Affairs Committee (1971-72).
Graduate Affairs Committee (1974-76) (89-92).
Chairman Search Committee (1978-79).
Department Recruiting and Advisory Committee (1980-90).
Chairman, Kovasznay Distinguished Lecture Series (1980-04).
Design Faculty Search Committee (1992-93).
Chairman Search Committee (2000).

College

Interdisciplinary Committee on Fluid Mechanics (Chairman) 1971-88.
Graduate Standards Committee, 1972-74; (Chairman) 1974-76; 1981-84.
Graduate Faculty Board, 1974.
Ocean Systems Simulation Committee, 1972-76.
Interdisciplinary Committee on Acoustics, 1972-.
Computer Usage Committee, 1972-73.
Safety Committee, 1972-73.
Ad hoc Committee to review Industrial Engineering Department, 1977.
Planning and Development Committee, 1978-79.
Nominating Committee, 1978-79.
Dean's Advisory Committee, 1982-86.
Research Awards Committee 1983-86.
Chairman, Committee of Full Professors, 1984-85.
Space Committee, 2001.
Committee to Select College Nomination for Moores Scholar, 2005
Member, Committee of Full Profs, 2005.
Member, Tom Hsu Chair Selection Committee, 2006.
Chair, Bill Cook Scholar Selection Committee, 2006.

University

Mission Self-Study Task Force on "The University and its Facilities and Finances: Assessment of Resources and Opportunities," 1974-75.

Chairman, ad hoc Committee on University Finances, 1975-78.

Chancellor's Advisory Committee 1978-81.

Faculty Advisory Committee on Research 1980-82.

RIG/REG Program, Office of Sponsored Programs, 1981.

Member, Search Committee for Vice-Provost for Research and Graduate Studies (1995).

John & Rebecca Moores Scholars Selection Committee (1996)

Member, Academic Computing Advisory Committee (1997)

Member, University Research Council, (2000-2007)

Member, Purchasing and Plant Operations Committee (2005-)

Cullen Chair Committee (2005-)

Energy Committee (2006-)

Member, Houston Teachers Institute Faculty Advisory Council (2006-)

Search Committee for Dean of Engineering (2007)

TEXAS TECH UNIVRSITY SERVICE

Endowed Chair Review Committee (2012-13)

PhD Standards Review Committee (2012-13)

Tenure Criteria Review Committee (2012-13)

Director of Proposed ERC on Wind Energy & Clean Water (2012-)

Chief Scientist and Senior Advisor of the National Wind Resource Center (2013)

Chair of ME Dept. Chair Search Committee (2013-)

Chairman, Maddox Chairs Review Committee, Texas Tech University, (2015-)

Chairman, Dept. of Mechanical Engineering Chair Search Committee (2015-2016)

SUMMARY OF SOME PROFESSIONAL SERVICE

National Academy of Engineering:

Member, Mech. Engr. (Sec. 10) Peer Committee (2004-07)

Secretary, Mech. Engr. section (2006-08)

Member, Sec 10 Search Committee (2007)

Vice-chair, Mech. Engr. section (2008-10)

Chair, Mech. Engr. section (2010-12)

Member, NAE President Selection Committee (2012)

Member, Charles Stark Draper Prize Committee (2011-2013)

Past-Chair, Mech. Engr. section (2012-2014)

American Physical Society:

Fluid Dynamics Prize Committee, (1991-93), (2000).

Nominating Committee, APS/DFD: Vice-chair (1997-98) ; Chair (1998-99, 09-10).

Otto Laporte Award Committee, Vice-Chair (2001-02), Chair (2002-03).

Vice-chair, DFD & Chair of Fellows Selection Committee (2000-01)

Chair-elect, DFD (2001-02)

Chair, DFD (2002-03)

Past-Chair, DFD (2003-04)

Host, Annual Meeting of Division of Fluid Dynamics (APS), U Houston (1983).

Organizing Committee, Annual Meeting of APS/DFD, Austin (2002).

Organizing Committee, Annual Meeting of APS/DFD, San Antonio (2008).

American Institute of Aeronautics & Astronautics:

Member, Fluid Dynamics Technical Committee, AIAA (1997-2001).

Technical Program Chair, 30th AIAA Fluid Dynamics Conference, Norfolk, VA, June (1999).

Chair, Fluid Dynamics Award Committee, AIAA (1999, 2000).

Member, AMT Technical Committee, (2001-04).

Member, AIAA Fellow Grade Selection Committee, (2001-03).

Chair, Fellows Selection Committee, Aerospace Sciences, AIAA (2005-).

The Academy of Medicine, Engineering & Science of Texas (TAMEST):

Member, 1st O'Donnell Prize Committee, (2005-06)

Member, 2007 TAMEST Annual Meeting Organizing Committee

Moderator, Engineering Plenary Session, 2007 Annual Conference, Austin.

Member, TAMEST Board, 2009-12.

The World Academy of Sciences (TWAS):

Member, Engr. Sciences Prize Committee (2003-7, 2008-2010)

Chair, Engr. Sciences Prize Committee (2010-13)

COMMUNITY SERVICE

Yoga teacher