ASHWANI K. GUPTA
Distinguished University Professor
University of Maryland, Department of Mechanical Engineering, College Park, MD 20742, USA
Tel: 301-405-5276 ; E-mail: akgupta@umd.edu

Ashwani Gupta worked as a research engineer at International Combustion Ltd., Derby from 1967 to 1971. During this period he spent one year at the University of Southampton and obtained his M.Sc. in Combustion and High Temperature Gas Dynamics from the Department of Aeronautics and Astronautics in 1970. He obtained his Ph.D. in Combustion from the University of Sheffield in 1973. He was awarded Honorary Doctorate from the University of Wisconsin Milwaukee in 2014, King Mungkut University of Technology North Bangkok, Thailand, 2014, bestowed by the Princess of Thailand, and University of Derby, UK in 2015. He was awarded higher doctorate D.Sc. from the University of Sheffield in 1986 and also from the University of Southampton in 2013 for his proven record of published high quality original research work and an authority in his field of study.

He received the AIAA Energy Systems Award in 1990, Propellants & Combustion Award in 1999, Air Breathing Propulsion award in 2014 and Pendray award in 2017. He received the ASME George Westinghouse Gold Medal in 1998, James Harry Potter Gold Medal award in 2003, James N. Landis Medal award in 2004, Worcester Reed Warner Medal in 2008, Holley Medal in 2010, ASME-AIM Percy Nicholls award in 2011, Melville Medal in 2013, Soichiro Honda Medal in 2018, and ASEE Ralph Coats Roe award in 2015. He was awarded the Univ. of Maryland President Kirwan Research Award in 2003 and College of Eng. Research Award in 2006. He was awarded Best Paper awards by ASME in 1991, 97 & 2003 and AIAA in 1987, 89, 92, 94, 2006, 2010 & 2012.

He was appointed Distinguished University Professor in 2008. He continues to serve as Professor of Mechanical Engineering (1988+) and Director of Combustion Laboratory. His academic experiences include six years as Member of Research Staff in the Energy Laboratory and Department of Chemical Engineering, MIT, three years as Research Associate and Independent Research Worker in Chemical Engineering & Fuel Technology, Sheffield University. He spent four months in Japan as consultant to Nippon Furnace and many other companies. At the University of Maryland he embarked the Combustion Laboratory.

His main research interests and contributions have been in the fields of Combustion, Swirl flows, High temperature air combustion, Diagnostics, Fuel spray, Fuel reforming, Sensors, Micro-scale combustion, Wastes to energy, Air pollution, Under water propulsion, and Sulfur from acid gas. He has co-authored three books entitled Swirl Flows, and Flowfield Modeling and Diagnostics, and High Temperature Air Combustion: from energy conservation to pollution reduction. He has published over 750 archival papers in journals, refereed symposia and conference proceedings.

He is the founding co-editor of the Energy Engineering and Environment Series published by CRC Publishers. He serves as Associate Editor of the Journal of Propulsion and Power. He served as Director of Propulsion and Energy Group at AIAA and also on the AIAA Board of Directors (2007-2013), Deputy Director of Energy group (2000-2007), Chairman of AIAA Terrestrial Energy Systems Technical Committee (1991-2000) and Chairman of the AIAA Propellants and Combustion Technical Committee (1988-1990). He is cited in Who's Who in America, Engineering, Technology, American Education, and Aviation in the USA, and The Men of Achievement in the U.K. He has served on many national technical committees and chaired many International conferences and symposia by invitation. He has served as consultant to many organizations in the USA, Europe and Japan, including International Consultant to the Japanese government (NEDO, METI). He is a Chartered Engineer and Fuel Technologist in the U.K., Honorary Fellow of ASME, and Fellow of AIAA, ASME, SAE, AAAS and RAeS(UK).

Biographical Sketch

Name:	Ashwani Kumar Gupta
Address:	Department of Mechanical Engineering University of Maryland, College Park, MD 20742
Telephone:	301-405-5276 (Office)
Citizenship:	USA and UK
Degrees:	B.Sc., M.Sc. Ph.D., D.Sc.
Professional Affiliations:	American Institute of Mechanical Engineers (Honorary Fellow 2016+, Fellow 2000+, Member 1990+) American Institute of Aeronautics and Astronautics (Fellow 1992+, Member 1980-1991) Society of Automotive Eng. (Fellow 2007+, Member 1992-2007) American Assoc. for the Advancement of Science, AAAS, (Fellow, 2016, Member 2012-16) Royal Aeronautical Society, UK (Fellow 2016+) Institute of Energy, UK (Fellow 1986+, Member 1972-1986, Chartered Engineer, C. Eng., 1974 +) Combustion Institute (Member 1973 +) Institute of Mechanical Engineers (Member 1971-74) American Society of Engineering Education (Member 1993-96)
Citations:	Who's Who in America Who's Who in Engineering Who's Who in Technology Who's Who in American Education Who's Who in Aviation Men of Achievement, Intl. Biographical Center, Cambridge, UK (23rd Ed.) Int'l., Who's Who of Intellectuals, 11th Edition, U.K. National Forensic Services Directory
Honors and Awards:	Distinguished University Professor at UMD (2008) Honorary Doctorate degree, Univ. of Wisconsin, Milwaukee, 2014 Honorary Doctorate degree, King Mungkut Univ. of Technology, North Bangkok, Bestowed by the Princess of Thailand, 2014 Honorary Doctorate degree, University of Derby, UK, 2015 D.Sc. form Southampton University, UK, 2013 D.Sc. from Sheffield University, England, 1986 for international recognition, numerous publications of original work & substantial contributions to learning in Engineering and Applied Science Energy Systems Award of AIAA, 1990 George Westinghouse Gold Medal, ASME, 1998 Propellants and Combustion Award, AIAA, 1999

James Harry Potter Gold Medal, ASME, 2003
University of Maryland President Kirwan Research Award, 2003
James N. Landis Award, ASME, 2004
University of Maryland College of Eng. Research Award, 2006
Worcester Reed Medal, ASME, 2008
Holley Medal, ASME, 2010
Percy Nicholls Award, ASME, 2011
Melville Medal, ASME, 2013
Air Breathing Propulsion Award, AIAA, 2014
ASEE Ralph Coates Roe award, 2015
Pendray Aerospace Literature Award, AIAA, 2017
Soichiro Honda Medal, ASME, 2018
AIAA Best Paper Awards(1987,1989,1992,1994,2006,2010, 2012)
ASME Best Paper Awards (1991, 1997 and 2003)
Elected to Honorary Fellow of ASME, 2016
Elected to Fellow Grade of AIAA, 1992
Elected to Fellow Grade of ASME, 2000
Elected to Fellow Grade of SAE, 2007
Elected to Fellow Grade of RAeS (UK), 2016
Elected to Fellow Grade of AAAS, 2016
Elected to Fellow Grade of the Institute of Energy, UK, 1986

Current Appointment:

Distinguished University Professor (2008 to Present)
Professor of Mechanical Engineering (1988 to Present)
Associate Professor (1983-1987)

Prior Appointments:

Research Staff Member (research in Combustion, Diagnostics, Swirl Flows, Alternative Fuels and Pollution). The Energy Laboratory and Dept. of Chemical Engineering, M.I.T., Cambridge, MA 02139 (1977-1982)

Senior Research Associate and independent Research Worker,
Dept. of Chemical Engineering and Fuel Technology
Sheffield University, England (1973-1976)

Consultant to Nippon Furnace Co., Japan (April 1976-July 1976)

Research Engineer
International Combustion Ltd.,
Derby, England (1967-1971)

Education:

Ph.D. Chemical Engineering and Fuel Technology, Noise Emission and Reduction from Swirl Combustors,
University of Sheffield, England (1971-73)

D.Sc. (Higher Doctorate) Chemical Engineering and Fuel Technology, University of Sheffield, England, 1986.

D.Sc. (Higher Doctorate) Univ. of Southampton, UK, 2013.

Honorary Doctorate, University of Wisconsin Milwaukee, 2014

Honorary degree, King Mongkut's University of Technology North Bangkok, Thailand, 2014

Honorary Doctorate, University of Derby, UK, 2015

M.Sc. in Combustion and High Temperature Gas Dynamics, Aeronautics & Astronautics, Swirl Flow Characterization, University of Southampton, England (1969-70)

B.Sc. Science
Punjab University, India (1963-66)

Publications: Over 750 research papers in the areas of combustion, swirl flows, noise and pollution, instability, diagnostics, gas turbine combustion, spray combustion, high temperature air combustion, wastes - see list of publications.

Thesis:

1. Gupta, A.K., Noise Emission from Swirl Combustors, Ph.D. Thesis, Department of Chemical Engineering and Fuel Technology, Sheffield University, England, 1973.

2. Gupta, A.K., An Experimental Investigation of Isothermal Swirling Air Jets, M.Sc. Dissertation, Department of Aeronautics and Astronautics, University of Southampton, England, 1970.

Books:

1. Swirl Flows by A.K. Gupta, D.G. Lilley, and N. Syred, Abacus Press, Tunbridge Wells, Kent, England, 1984, 475 pages.

2. Flowfield Modeling and Diagnostics by A.K. Gupta and D.G. Lilley, Abacus Press, Tunbridge Wells, Kent, England, 1985, 414 pages.

3. High Temperature Air Combustion—from energy conservation to pollution reduction, by H. Tsuji, A. K. Gupta, T. Hasegawa, K. Katsuki, K. Kishimoto and M. Morita, CRC Press, 2003, 401 pages. [First printing sold out within 6 weeks of publication].

Books Edited:

1. Co-editor: Energy Engineering and Environment Series published by CRC Press. To date published eight volumes, several more are in progress, and many more to follow in future. Energy and Engineering Science Series, Editors: A.K. Gupta and D.G. Lilley, Abacus Press, Tunbridge Wells, Kent, England (and Gordon & Breach Science Publishers), London, England, 1980 – 1993; Springer Verlag, 1990-94; CRC Press 1995-present.

2. Environmental and Energetics series, Editors: A. K. Gupta and D. G. Lilley, Springer Verlag Publishers, 1990-1993.

3. Energy Engineering and Environmental Series, Editors: A. K. Gupta and D. G. Lilley, CRC Press, 1993-Present.

4. Modeling of Furnaces and Combustors by E. E. Khalil, Abacus Press, Tunbridge Wells, Kent, England, 1982, 260 pages.

5. Fuels and Combustion in Gas Turbines by J. Odgers and D. Kretschmer, Abacus Press, 1986, 186 pages.

6. Laser Diagnostics for Combustion Temperature and Species by A. C. Eckbreth, Abacus Press, 1988, 350 pages.

7. Combustion: A study in Theory, Fact and Applications, by J. Chomiak, Abacus Press/Gordon and Breach Science Publishers, 1990, 464 pages.

8. Power Plant Design by E. E. Khalil, Abacus Press/Gordon and Breach Science Publishers, 1990, 370 pages.

9. Computer Integrated Experimentation by Ed. B. Magrab, Springer Verlag, 1991, 295 pages.

10. Integrated Product and Process Design and Development: The Product Realization Process, by Ed. B. Magrab, CRC Press, Spring 1997, 306 pages.

11. Enclosure Fire Dynamics, by B. Karlsson and J. Quintiere, CRC Press, 2000, 315 pages.

12. Advances in Chemical Propulsion: Science to Technology, by G. D. Roy, CRC Press, 2002, 528 pages.

13. Novel Combustion Concepts for Sustainable Energy Development, by Agarwal, A. K., Pandey, A., Gupta, A. K., Aggarwal, S. K. and Kushari, A., Springer Publishers, 2014, ISBN: 978-81-322-2210-1.

14. Handbook of Clean Energy Systems, Mitigation Technologies, Volume 3, Eds. A. K. Gupta and J. Yan, Wiley Publishers, 2015, ISBN: 978-118-38858-7.

15. Energy Combustion and Propulsion-New Perspectives, Eds.: Agarwal, A. K., Aggarwal, S. K. Gupta, A. K., Kushari, A. and Pandey, A., Athena Publishers, London, UK, 2016, 609 pages, ISBN: 978-19-1039-029-0.

16. Energy for Propulsion: A Sustainable Technologies Approach,

Eds.: Runchal, A. K., Gupta, A. K., Kushari, A., De, A., and Aggarwal, S. K., Springer publishers, 2018, 494 pages, ISBN: 978-981-10-7472-1, https://doi.org/10.1007/978-981-10-7473-8

17. Innovations in Sustainable Energy and Cleaner Environment, Eds.: Gupta, A. K., De, A., Aggarwal, S. K., Kushari, A., and Runchal, A.K, Springer publishers, 2019, 561 pages, ISBN: 978-981-13-9011-1 ; https://doi.org/10.1007/978-981-13-9012-8

18. Sustainable Development for Energy Power and Propulsion, Ed.: A. De, A. K. Gupta, S. Aggarwal, A. Kushari, and A. K. Runchal, Springer publishers, In preparation, March 2020, 2020._89025589

Book Chapters:

1. Presser, C., Gupta, A. K., Dobbins, R. A. and Semerjian, H. G.: Influence of Size Distribution on Droplet Mean Diameter Obtained by Ensemble Light Scattering, ASTM Publication: Liquid Size Measurement Techniques, Editors: Hirleman, Bachalo and Felton, Vol. 2, STP 1083, 1990, p. 93-111.
2. Presser, C., Avedisian, C. T., Hodges, J. T. and Gupta, A. K.: Behavior of Droplets in Pressure-Atomized Fuel Sprays with Coflowing Air Swirl, AIAA Progress Series in Astronautics and Aeronautics, Recent Advances in Spray Combustion: Spray Combustion Measurements and Model Simulation, Vol. 171, Ed. K.K. Kuo, April, 1996, pp.31-61.
3. Gupta, A. K., Megerle, M., Charagundla, S. R. and Presser, C: Spray Flame Characteristics with Steam-Assisted Atomization, Chapter 16 in Advances in Chemical Propulsion Science and Technology, Ed.: G. D. Roy, CRC Press, 2001, pp. 261-274.
4. Lois, E., Keating, E. L. and Gupta, A. K.: Fuels, Chapter in the Book "Encyclopedia of Physical Science and Technology", 3rd Edition, Vol. 6, John Wiley, New York, 2002, pp. 275-314.
5. Gupta, A. K. and Lilley, D. G.: Thermal Destruction of Wastes and Plastics, Chapter 15 in the Book entitled 'Plastics and the Environment', John Wiley & Sons, Inc., 2003, pp. 629-696.
6. Linck, M., Habibzadeh, B. and Gupta, A. K.: Passive Control of Flow and Flame Structure in Spray Combustion, Chapter 32 in the book entitled 'Advances in Combustion and Noise Control, Cranfield University Press, (Eds.: G. D. Roy, K. H. Yu, J. H. Whitelaw, and J. J. Witton), 2005, pp. 491-511.
7. Gupta, A. K., Habibzadeh, B., Archer, S, and Linck, M: Control of Flame Structure in Spray Combustion, Chapter 12 in the book entitled 'Combustion Processes in Propulsion', (Ed. G. D. Roy), Elsevier Publishers, 2006, pp. 129-137.
8. Gupta, A. K.: Advanced Technologies for Clean and Efficient Energy Conversion in Power Systems, in the book entitled "Thermal Engineering Aspects in Power Systems", WIT Press, UK, 2008.
9. Yu, M., Bryden, M. and Gupta, A. K.: Towards Smart High Density Sensor Network for Combustion and Power Plant Monitoring, in the

book “Advanced Power Plant Materials, Design and Technology”, Woodward Publishing Co., UK, 2010.

10. Gupta, A. K., Mochida, S. and Yasuda, T.: Regenerative Combustion using High Temperature Air Combustion Technology (HiTAC), Industrial Combustion Testing, Ed.: Charles Baukal, John Zink Co, Tulsa, OK, 2010.
11. Gupta, A. K.: Waste and biomass to Clean Energy, in Handbook of Clean Energy Systems, Mitigation Technologies, Wiley, Volume 3, pp. 1797-1920, 2015, ISBN: 978-118-38858-7.
12. Khalil, A. E. and Gupta, A.K.: Mixture Preparation Effects on Distributed Combustion for Gas Turbine Applications, in Novel Combustion Concepts for Sustainable Energy Developments, Springer Publishers, pp. 277-296, 2015, ISBN: 978-81-322-2210-1.
13. Gupta, A. K.: Waste and Biomass to Clean Energy, Energy Combustion and Propulsion: new Perspectives, Athena Publishers, London, UK, pp. 453-496, 2016, ISBN: 978-19-1039-029-0
14. Arghode, V and Gupta, A. K.: Investigation of Forward and Reverse Flow CDC Combustors, Springer publishers, 77-100, ISBN 978-981-10-3784-9, https://doi.org/10.1007/978-981-10-3785-6 .

Journal Editorships:
Editor in Chief
Intl. J. of Energy and Clean Environment (2019-Present)
Associate Editor
J. Applied Energy, J. Propulsion and Power (2009 - present), Intl. J. Sprays and Combustion Dynamics, J. Sustainable Energy and Environment (2008-prsent), Intl. J. Applied Science and Tech., KMUTNB, and Progress in Energy and Combustion Science (2013-2018)

Patents:

1. Yang, W., Blasiak, W., and Gupta, A.K.: A novel routine to generate renewable liquid matters and fuels using ultra high temperature steam pyrolysis of lingo-cellulose based raw material, Swedish Patent No. 535121, Issued on March 20, 2012.
2. Gupta, A.K.: Method and system for recovering sulfur in the thermal stage of a Claus reactor, US Patent No. 8,449,860B2, granted May 28, 2013.
3. Gupta, A. K.: Fuel Efficient Ultra Low Emission Colorless Distributed Combustor for Gas Turbine Application in Stationary and Propulsion Systems, US8695350B2, also published as US20110023492, April 15, 2014.
4. Gupta, A. K., Fuel Efficient Ultra Low Emission Colorless Distributed Combustor for Gas Turbines in Stationary and Propulsion Applications, US patent No. 14/223378, granted September 6, 2016.
5. Scenna, R and Gupta, A. K.: Methods and Systems for Distributed Reforming of Hydrocarbon Fuels for Enhanced Hydrogen Production, in progress, June 12, 2018.

Recent Doctoral Students Advised and Graduated (partial list)

PhD Thesis Main Advisor

Sean S. Archer (African American). Graduated in August 2005. Now employed as Lead Engineer/Technologist, Combustion Aero Technology and Design at General Electric Co., Cincinnati, OH

Mohammad Ghaderi. Graduated in December 2005. Now working as Combustion Engineer at a Company in MD.

Martin B. Linck. Graduated in May 2006. Now working as Group Leader, at Institute of Gas Technology, Chicago, IL.

Vivek Gautam, Graduated in Dec. 2007. Worked as Research Engineer at Air Liquide, Elkton, MD, Now President of Air Liquie, Atlanta, GA

Ahmed Abdelhafez, Graduated in June 2009. Worked as Post doc researcher at NSWC, Indian Head, MD; Research engineer at GE Global office, Schenectady, NY. Now Research Professor at KFUPM, Saudi Arabia.

Vineeth Vijayan, Graduated May 2010. Now working as Research Engineer at General Electric Co, KY.

Vaibhav Arghode, Graduated in October 2011. Now working as Assistant Professor at IIT Kanpur India.

Islam Ahmed Gomma, Graduated in December 2011. Now working as Engineer at GE Energy, NC.

Hatem Selim, Graduated in December 2012, Worked as a Post-doctoral researcher at the Center for Combustion Research, KAUST, Saudi Arabia, Now working as Engineer at GE Saudi Arabia.

Vivek Shirsat, Graduated December 2012, Now working as Patent Examiner, Patent and Trademark Office, Washington DC.

Ahmed Khalil, Graduated in December 2013. Now working as a Post Doc. at UMD Combustion Lab.

Salisu Ibrahim, Graduated in May 2015. Now working as Postdoc at The Petroleum Institute and ADNOC, Abu Dhabi, UAE.

Henry Molintas, Graduated in December 2015, Now working as Environmental Engineer, NSWC Carderock Division, Bethesda, MD.

Richard Scenna, Graduated in May 2017, Now employed as Research Engineer at US Army, APG, Aberdeen.

Ahmed Mahmoud ElMelih, Graduated in June 2017, Now working at Mechanical Engineering Dept., Cairo University, Egypt

Jonathan Brooks, Graduated in July 2018, Now working as Research Engineer in Genova, Italy.

Co-Advisor

Magnus Mortberg. KTH, Royal Institute of Technology, Stockholm, Sweden, Graduated in May 2005, [PhD], Now Branch Head of Combustion at Air Liquide, Paris, France

Atsushi Katoh. Tokyo Institute of Technology, Tokyo, Japan, Graduated in March 2006, [PhD]. Now workig as lead combustion engineer in a R&D company, Japan

Kriengsak Sangtong-Ngam, Graduated in September 2006 [M. Phil]. King Mongkut University of Technology Thonburi, Bangkok, Thailand

Nimit Nipattummakul, Graduated in April 2011 [PhD]. King Mongkut University of Technology North Bangkok, Bangkok, Thailand, Now working as Lead Team Manager at National Innovation Agency (NIA), Bangkok, Thailand.

MS Thesis Main Advisor

Ryan James, May 2010. Now working as Engineer at Coast Guard Academy, Washington, DC.
Aaron Lyko, Graduated in May 2013. Now working as Engineer at Coast Guard Academy, Norfolk, VA.

Kevin Burnett, Graduated in May 2015, Now employed at The US Naval Academy, Annapolis, MD.
Teresa Wierzbecki, Graduated in August 2015. Now working in NYC
Jacob Mendelson, Graduated December 2016. Now employed at US Navy.
Parth Kathrotiya, May 2017, Now employed as research Engineer at USAF, Tunnel 9 White Oak, MD
William Van Cleve, August 2017, Now working as Engineer at Coast Guard Academy, Washington DC.
Joseph S. Feser, December 2019. Now working on his PhD thesis research in the combustion Lab., UMD.

Invited Lectures

Invited Lectures at universities and conferences (partial list):

- Several at ASME, AIAA and SAE meetings over 40+ years
- German Flame Day, Univ. of Bochum, Germany
- University of Karlsruhe, Germany
- Royal Institute of Technology, KTH, Sweden
- University of Connecticut, Storrs, CT
- University De Rouen, France
- Tufts University, Boston
- Boston University, Boston
- Northeastern University, Boston
- MIT, Cambridge
- Iowa State Univ., Ames, IA
- Cornell University, Ithaca, NY
- University of Rhode Island, Kingston
- Ohio State University, Columbus
- Purdue University, W. Lafayette
- Nagoya Univ., Tokyo Univ., Gumma Univ., Mie University
- Many other institutions/organizations throughout the world

Invited Lectures at Industrial organizations include (partial list);

UK: CEGB, ICI, GEC, BP, I.C., and Tioxide Intl., RR

USA: Combustion Eng., GE, UTRC, Cabot Corp., Riley Stoker, Union Oil, Boeing, Amoco Oil, ARCO Petroleum Co., Katalco Corp,.

Japan: NFK, Tokyo Gas, Japan National Aero Labs, University of Tokyo, Gunma Univ., Nagoya University, Mie University, JIFMA, MITI, NEDO, Toshiba Corp., Mitsubishi Co., NKK, Chiyoda Corp., Honda Motor Co., Nissan Motor Co., Toyota Motor Co., and many other universities and companies in Japan.

Switzerland: Alstom Power, Baden

Sweden: Royal Inst. of Tech (KTH), Volvo AB, Groteborg, Jernkontoret

Germany: Siemens AG, MTU, Univ of Karlsruhe, Univ. of Ruhr, Bochum, Freiburg Inst.

Reviewer
Served as a reviewer for many journals including The Combustion Institute, Combustion and Flame, Combustion Sci. and Tech., Applied Energy, Fuel, Atomization and Sprays, Progress in Combustion and Energy Science, J. Hydrogen Energy, ASME JERT, Energy, Fuel Processing Tech., Fuel, Biomass and Bioenergy, Energy and Fuels, J. Propulsion and Power, J. Sprays and Combustion Dynamics, Intl. J. Applied Science and Technology, Applied Mechanics Reviews, AIAAJ, JPP, J. Energy (UK), and several other journals.

Courses Taught

- Principles of Combustion
- Experimental Methods in Combustion and Heat Transfer
- Thermodynamics 1, 217
- Thermodynamics 2, 315
- Fluid Mechanics 1, 342
- Energy Conversion Design, 405
- Mechanical Engineering Systems Design, 404
- Engineering Experimentation, 480
- Mechanical Engineering Laboratory, 703
- Combustion, 808C, and Introduction to Combustion Phenomena, 489C.
- Thermal Destruction Technology, ENPM 626
- Energy Conversion Systems for Sustainability, ENME489X
- Product and Process Development, ENME 471
- Renewable Energy, 489S
- Thermodynamics, ENME 320
- Air Pollution, ENPM 623 and ENME 489A
- Waste Destruction and Pollution Technology, ENME489W
- Sustainable Energy Systems, ENME489X

Courses Developed

- Combustion
- Engineering Experimentation
- Thermal Destruction Technology
- Air Pollution
- Renewable Energy
- Sustainable Energy
- Solar Energy

Externally Funded Research
1. AVCO Grant, NOx Emission from MASB, $40,000 in July 1, '85 - Sep. 30 '86, Principal Investigator: A.K. Gupta

2. AVCO Grant, NOx Emission from MASB, (continuation of above grant) $120,000 Nov. 1, '86 - Oct. 31 '88, Principal Investigator: A.K. Gupta
3. Navy - ONR, Fouling and Particulate Deposition and Low Temperature Surfaces, $232,850, Sep. 1 '85 - Aug. 31 '88, Principal Investigator: A.K. Gupta
4. Peace Fellowship, 1 student Fellowship plus $4,500
5. NSF Equipment Grant, $31,000, July 1 '88 - June 30 '89, P.I.: A.K. Gupta
6. USNA Grant, $9,500, PI: A.K. Gupta
7. MIPS - Gerace Combustion, $105,000, August '89 - July '91, P.I.: A.K. Gupta
8. MIPS - MTCI, $75,000, February '90 - January '91 - February '91, P.I.: A.K. Gupta
9. FRCU/Cairo University Grant, $100,000, March '90 - February '92, P.I.: A.K. Gupta
10. Peace Post Doctoral Fellow, plus $4,000, January '91 - June '91, P.I.: A.K. Gupta
11. Navy, $56,500, September '91 - August '92, P.I.: A.K. Gupta
12. Navy, $75,000, November '92 - March '95, P.I.: A.K. Gupta.
13. NSF, $231,000, March '93 - September '96, P.I.: A.K. Gupta.
14. NASA, $219,000, April '93 - Feb. '97, P.I.: A.K. Gupta.
15. Navy, $67,000, June '93 - October '94, P.I.: A.K. Gupta.
16. Navy, $10,000, September '93 - December 93', PI: A.K. Gupta.
17. Sonex Research, $137,000, September '92 - September '94, P.I.: A.K. Gupta.
18. Navy, NSWCCD, $918,000, December '93 - December '99, PI: A.K. Gupta.
19. MIPS - Lean Power $79,000, February '93 - February '96, P.I.: A.K. Gupta.
20. NASA, Hypersonic Research Center, $1,100,800, Aug. '93 - Aug. '98, Co-P.I.: A.K. Gupta.
21. SCERDC (DoE), $573,000, August '94 - April '98, P.I.: A.K. Gupta.
22. NIST, $67,000, February ’96 - December ’96, P.I.: A.K. Gupta.
23. ONR, $323,000, July ’95 - June ’98, P.I.: A.K. Gupta.
24. ONR, DURIP, $189,900, March ’97 - Feb. ’98, P.I.: A.K. Gupta.
25. AERA (NAVAIR) $50,000, Dec. ’97 - Nov. ‘98, P.I.: A.K. Gupta
26 NSF, $225,000, July ’97 - June ’05, P.I.: A.K. Gupta
27. NASA HQ, $410,000, February ’99- January ’04, P.I.: A.K. Gupta.
28. ONR, $310,000, April ’99 - March ’04, PI: A.K. Gupta.
29. Teledyne Brown Engineering, $251,000, August 2000-May 2002, PI: A.K. Gupta.
30. NASA Glenn September ‘01- December ‘06. Total for 5 yrs. project $575,000. PI: A.K. Gupta.
31. ONR, DURIP, $468,500, February 2001-September 2002, PI: A. K. Gupta.
32. ONR $840,000, February 2003-December 2006, Co PI: A. K. Gupta.
33. NASA URETI, August 2002- July 2007, $15,000,000, Co-PI: A. K. Gupta, Advanced Propulsion.
34. GVE $30,000, September 2003–May 2004, PI: A. K. Gupta, Additional $85,000, May 2005-February 2006.
35. MIPS, Astrox Corp., Inward Turning Design, $50,000, February 2004-January 2005, Co-PI: A. K. Gupta.
36. ONR, Waste Destruction, July 2004-June 06, $210,000, PI: A. K. Gupta.
37. MIPS, Astrox Corp, Inward Turning Design, $100,000, August 15, 2005-August 14, 2006, PI: A. K. Gupta.
38. ONR, Waste Destruction, $599,000, Feb 06- Jan 2011, PI. A. K. Gupta.
39. MDA, Micro-combustor Development, $500,000, Nov. 05-Nov 08, P.I.: A. K. Gupta.
40. AEDC, Raman Spectroscopy and High Temperature Seals, $60,000, March 2005-March 2010, PI: A. K. Gupta.
41. GVE, Flameless (HiTAC) Gas Turbine Combustor Development, $150,000, July–September, 2008 – March 2010, PI: A. K. Gupta.

42. DoE/Ames Lab., Multi Sensors for Combustion Systems, June 06-Sep 10, $175,000, PI: A.K. Gupta; Sep. 2010- Sep 2015, $900,000, PI: A. K. Gupta, Co-PI: M. Yu.
43. Petroleum Institute, UAE, Energy and Education Research Collaboration (EERC), $4,000,000, October 2006—October 2009, Co-PI: A. K. Gupta.
44. ONR, Active Control of Ram Jet Combustor, Sep. 1, 2007 – Aug. 28, 2011, $447,000, PI: K. H. Yu, Co-PI: A. K. Gupta.
45. ONR, Flameless oxidation of fuels for Application in Gas Turbine Combustors, Sep. 1, 2007 – Sep. 31, 2012, $465,000, PI: A. K. Gupta, Co-PI: K. H. Yu.
46. MDA, Micro-Combustor Development for Bipropellant, June 2009- April 2013, $599,700, PI: A. K. Gupta.
47. GVE, Development of Distributed Combustion for gas Turbine Application, $30,000, January-June 2011, PI: A. K. Gupta.
48. Petroleum Institute, UAE, Sulfur Recovery from gases, April 2009- December 2012, $480,000, PI: A. K. Gupta, Total project funding ~$6,000,000 for 3 years.
49. DoE/Ames Lab., Green Turbine Combustor Development for Zero Emission Gas Turbine Application, March 2010- March 2015, $900,000, PI: A. K. Gupta,
50. MSU, DLA, Distributed Combustion using Alternative Fuels, $99,998, September 1, 2010-March 31, 2012, PI: A. K. Gupta
51. AEDC, Design of High Temperature Seals, $26,000, January 2011-September 2012, PI: A.K. Gupta.
52. MSU, DLA, Distributed Combustion using Alternative Fuels, $99,000, Oct. 1, 2011-June 2013, PI: A. K. Gupta.
53. Army Research lab, Development of High Performance and Fuel Flexible Distributed Combustion for Gas Turbine Engines and Power generation, $139,999, Sep. 1, 2011 - March. 31, 2013, PI: A. K. Gupta.
54. ARL, Graduate Fellowship, PI: A. K. Gupta, $42,000/year for one year at a time up to about 4 years. July 2012-July 2016.
55. AFOSR, A Center of Excellence for Revitalization of the Hypersonic Testing and Evaluation Workforce, Co-PI: A. K. Gupta, $2,628,314, 09/15/2010 – 09/14/2017, (Co-PI Portion $532,000 (PI: K. Yu and M.J. Lewis).
56. Petroleum Institute, UAE, Treatment of Contaminants (BTX) in Crude Natural Gas in Claus Reactor, PI: A. K. Gupta, $347,485, Sep 2011-Sep 2014.
57. NASA GSFC, Micro-combustor development, PI: A. K. Gupta, $20,000, October 2011-March 2013.
58. AEDC, Arnold Airforce Base, AEDC/White Oak Systems Engineering Team Engineering Assistant, PI: A. K. Gupta, $29,700, 01/06/2011 – 09/30/2017.
59. NSF EAGER, Minimum Thermal Conductivity and Thermal Expansion Ceramic Nanocomposites for Microcombustor, PI: A. K. Gupta (with B. Yang as Co-PI), $127,500, 08/15/2012 – 07/31/2016.
60. Virtuhcon, Dresden, Germany, Experimental Examination of Coal Char Particle Porosity and Properties during Gasification in CO2/Steam Environments, PI: A. K. Gupta, $76,700, July 2012-July 2013.
61. AEDC Arnold Airforce Base, Tunnel-9 Heater Hot Gas Venting System Thermal Analysis, PI: A.K. Gupta, $150,000, 09/01/2014 – 05/31/2017.
62. MDA, ADN Micro-Propulsion, PI: A.K. Gupta, $699,000, August 2013-December 2016.
63. Petroleum Institute, GASCO, Separation of Hydrogen from Hydrogen Sulfide Stream, PI: A.K. Gupta, March 2014-July 2017, $549,962.
64. ONR, High Temperature Energy Systems (HiTES), PI: A. K. Gupta, $2,149,625, June 2014-June 2018.

65. AF Tunnel-9 Heater Hot Gas Venting System Thermal Analysis, $150,000, PI: A.K. Gupta, Sep 1, 2014-May 31, 2017.
66. ONR DURIP, Advanced Diagnostics for High Temperature Distributed Combustion, PI: A. K. Gupta, $476,958, 6/30/2016 - 6/30/2018.
67. AFOSR, Hypersonic Center of Testing Excellence for Fostering Future Test & Evaluation Workforce, $2,574,230, 12/15/2016 to 12/14/2022, Co-PI (A. K. Gupta) portion: $600,000 (PI: Ken Yu)
68. ONR, High Temperature Energy Systems II (HiTES-II), PI: A. K. Gupta, $3,000,000, July 2017-June 2021.
69. NSF, Development of Next Generation Microcombustor–Thruster Using Anisotropic Nano-Coating, PI: A. K. Gupta, co-PI: B. Yang, $300,000, 9/2017- 9/2020

At UMD embarked, developed and directs the Combustion Laboratory. Key Facilities developed in this lab include:

- Variable Geometry Swirl Combustor
- Double concentric premixed and diffusion swirl combustors
- Fouling and Deposition Flow Facility
- Single Droplet Studies
- Modulated Swirl Combustor
- Optically Accessible Internal Combustion Engine with Square Piston
- Spray Combustion Facility
- Controlled Mixing History Plasma Reactor
- Waste Fuel Thermal Destruction Facility
- Simulated High Pressure and High Temperature Mixing Facility
- Combustion in Microgravity facility
- High Temperature Air Combustion Facility
- High Temperature Gasification Facility
- Underwater Propulsion Studies Facility
- Rocket Injector Test Facility for Space Propulsion Studies

Key Diagnostic Facilities in the Lab include:

- Laser Velocimetry
- 3-D Particle Image Velocimetry (PIV), 2 Systems, High frequency PIV
- 2-D Phase Doppler particle Size Analyzer (PDPA)
- High Speed Cinematography and low speed Photography
- IR Thermal vide camera
- PLIF, GC/MS, FTIR and TGA/DSC diagnostics
- Micro-Gas Chromatograph and Gas Chromatograph
- Gas analyzers for CO, CO2, O2, UHC, NO/NOx, SOx,
- Laser Interferometry
- Flow Visualization via Image Digitization
- Droplet/Particle Sizing via Image Digitization
- Velocity and Concentration Probes for use in Utility Boilers
- Suction Pyrometer for use in Utility Boilers

Professional Services/Activities

- Deputy Director of Energy AIAA (2019+)
- Director of Propulsion and Energy, AIAA (2007-2013)
- Oversight Chair, International Conference on Incineration and Thermal Treatment Technologies (IT3), 2001-Present.
- Deputy Director of Energy, AIAA, 2000-2007.
- Chairman of Propellants and Combustion Technical Committee, AIAA (1988-1990).
- Chairman of Terrestrial Energy Systems, TC, AIAA, 1990-2000.
- Founding co-editor of Energy and Engineering Science (Abacus Press/Gordon & Breach Publishers), and Environmental and Energy series of textbooks, CRC Press (1995+).
- Chairman, ASME Fuels and Combustion Technologies Division, 1999-2001.
- Program Chair, ASME Computers and Information in Engineering (CIE) Conference, 1999, Division Chair, 2002-2003.
- ASME Fuels and Combustion Technologies (FACT) Division Chair, 1999-2001.
- Program Vice-Chair, 31st and 32nd IECEC Conferences, 2003 and 2004
- Associate editor of Journal of Propulsion and Power (1996-present)
- Session Chairman and Abstract/Paper Reviewer for AIAA, ASME, SAE and Combustion Institute on several occasions since 1980.
- Wrote "Aerospace Highlights" P&C TC 1987 article, published in Dec. 1987 issue of Aerospace America; also contributed during 1988 - present.
- Organized all Propellants & Combustion sessions at 24th Aerospace Sciences Meeting, Jan. 1986.
- Reviewer for many Intl. Technical Journals and Publishers.
- Reviewer for NSF, EPA, DOE, ASEE, NASA and State of Maryland.
- Assisted many companies in Maryland through U. of MD Eng. Research Center.
- ASME and AIAA Conferences Paper Selection and Review.
- Conference Session Organization and Chairmanship.
- Member Board of Boiler Rules, State of Maryland (1991+), Acting chair (2003-present).

University Services

- Clark School of Engineering, UMD, Appointment, Promotion and Tenure (APT) Committee (2016-2019); APT Chair (2018-19).
- Mechanical Engineering sept safety committee (2016-present)
- Division Leader, Thermo-Fluids & Energy Systems (TFES) Group, Mech. Eng. Dept. (2003-2011)
- Administration of a large group of student activity on grants and contracts.
- Member Graduate Committee, Mech. Eng. (1985-1987, and 1994-99).
- Faculty Prospect Screening Committee in Energy (1985+).
- Energy Conservation at U. MD Physical Plant Boilers (1986-92).
- Linking International Cooperative Research Exchanges between Univ. of MD and Egypt, Sweden, France, Japan, UAE, Brazil, Thailand and India.
- Campus adjunct committee on Research (1988-90)
- Super Mileage Vehicle development and national competition (1993-98).
- Member of Department Executive Committee (1988-94).

- Member of Department safety committee (1997+).
- Graduate committee (1995-1998).
- Mech. Eng. Dept. advisory committee (2003-09).

Invited, Keynote and Plenary Lectures (Partial List):

1. Gupta, A. K.: Colorless Distributed Combustion: Recent Developments and Path Forward, Invited keynote at Workshop on MILD/Distributed Combustion, Naples, Italy, Jan. 24-25, 2019.
2. Gupta, A.K: Waste Utilization for Sustainable Energy Resources, 10th International Conference on Combustion, Incineration/Pyrolysis, Emission and Climate Change (I-CIPEC), Plenary lecture, Bangkok, Thailand, Dec. 18-21, 2018.
3. Gupta, A. K.: Fuel Upgrading to Cleaner and High Value Fuels and also Pyrolysis, Gasification and Fuel Reforming, Congreso International de Energia de la Biomass y Desechos Organicios, Plenary lecture, National University of San Agustín, Arequipa, Peru, June 21-23, 2017
4. Gupta, A. K.: Sustainable Clean Energy Production in a Carbon Constrained World, 7th TSME International Conference on Mechanical Engineering (TSME-ICoME 2016), Chiang Mai, Thailand, Dec 14-16, 2016.
5. Gupta, A.K.: Gasification, Pyrolysis and Fuel Reforming, DBR Lecture at University of Calgary, Alberta, Canada, Jan. 7, 2016.
6. Gupta, A.K.: Role of Fuel Injection Scheme in a High Intensity Combustor, Invited Keynote Lecture at Intl. Symposium on EcoTopia Science (ISETS 2015), Nagoya University, Nagoya Japan, Nov. 27-29, 2015.
7. Gupta, A.K.: Colorless Distributed Combustion (CDC): What it is and Where it is Heading, Plenary Lecture at 10th European Conference on Boilers and Industrial furnaces, Porto, April 7-10, 2015.
8. Gupta, A.K.: Clean Energy Production from Wastes and Biomass, Keynote lecture at Intl. Conference on Applied Energy, Abu Dhabi, UAE, March 28-31, 2015.
9. Gupta A.K.: Clean Energy Production from Wastes and Biomass, Plenary Lecture at Thai Society of Mechanical Engineering conf., Chiang Mai, Thailand, Dec. 17-19, 2014.
10. Gupta, A. K: Clean Energy Production from Wastes, World Green Energy and Resources Congress (WGERC), Beijing, China, Nov. 1-3, 2014.
11. Gupta, A.K.: Gupta, A.K.: Plenary Lecture, Global Challenges and Opportunities Provided by Growing Energy Demands, Intl. Symposium on EcoTopia Science (ISETS 2013), Nagoya University, Nagoya, Japan. December 13-15, 2013.
12. Gupta, A.K.: Keynote Lecture 'Towards Efficient, Affordable and Sustainable Green Energy', Intl. Symposium on EcoTopia Science (ISETS 2013), Nagoya University, Japan, Dec 13-15, 2013.
13. Gupta, A. K.: Increasing Efficiency for Energy Sustainability and Reduced Environmental Footprint, Invited presentation at KMUTNB, Nov. 13, 2013.
14. Gupta, A.K.: Increasing Efficiency for Energy Sustainability and Reduced Environmental Footprint', World Green Energy & Resources Congress 2013 (WGERC 2013), Changwon, S. Korea, October 28~29, 2013
15. Gupta, A.K.: Sustainable Energy for Rapid Transition to Market Place, 2013 International Conference on Alternative Energy in Developing Counties and Emerging Economies (2013AEDCEE), Pullman Bangkok King Power Hotel, Bangkok, Thailand, May 30-31, 2013.
16. Gupta, A.K.: Short course on 'High Temperature Air Combustion', Monastir, Tunisia,

May 19, 2013.

17. Gupta, A. K.: Trends in Global Energy use and Pinnacle Role of HiTAC and renewable Energy, King Mungkut University North Bangkok (KMUTNB), Thailand, Nov. 20, 2012.
18. Gupta, A. K.: Trends in Global Energy use and Pinnacle Role of High Temperature Air Combustion (HiTAC),World Green Energy and Resources Congress (ATA), Changwon, S. Korea, Nov. 5-6, 2012,
19. Gupta, A. K.: Clean and Efficient Power Production and Role of Renewable Energy, Plenary Lecture at The Fifth International Exergy, Energy and Environmental Symposium (IEEES-5), Luxor, Egypt, December12-15, 2011.
20. Gupta, A. K.: Clean Power Production and Role of Renewable Energy, Intl. Symposium on EcoTopia Science (ISETS), Nagoya University, Japan, December 9-11, 2011
21. Gupta, A. K.: Evolution of Syngas from Rice Husk Pyrolysis and Gasification, Keynote Lecture, Advanced Technology and Applications (ATA), Kyungnam University, S. Korea, Nov 1-3, 2011.
22. Gupta, A. K.: Clean and Sustainable Future Power Generation, Plenary Lecture at World Renewable Energy Congress (WREC), Bali, October 17-19, 2011
23. Gupta, A. K.: Clean and Efficient Energy Production corm Coal and Biomass, Plenary Lecture at 7th Intl. Symposium on Coal Combustion (7th ISCC), Harbin, China, July 17-20, 2011.
24. Gupta, A. K. High Temperature air Combustion and Fuel Reforming, Seminar at University of Illinois, Chicago, IL, November 30, 2010.
25. Gupta, A. K.: High Temperature air Combustion and Fuel Reforming, Seminar at Michigan State University, East Lansing, MI, October 12, 2010.
26. Gupta, A. K.: High Intensity Colorless Distributed Combustion for Stationary Gas Turbine Application, 8th HiTACG Conference, Poznan, Poland, July 5-7, 2010.
27. Gupta, A. K.: Gasification Kinetics of Paper Char, Intl. Green Energy Conference (ATA), Nov 12-13, 2009.
28. Gupta, A.K.: Clean Power Generation from Fuels using High Temperature Air Combustion Technology, Iowa State University, Dept. of Mechanical Eng, Ames, Iowa, February 12, 2008.
29. Gupta, A.K.: High Temperature Air Combustion: Energy Savings, Pollution Reduction and Fuel Reforming, Plenary Lecture, 7th Intl. High Temperature Air Combustion and Gasification Conference, Phuket, Thailand, January 13-16, 2008.
30. Gupta, A. K.: Simulation of Claus Furnace under HiTAC Conditions for Enhanced Sulfur Recovery, Intl. Workshop on Advances in Combustion Science and Technology, Kanpur, India, December 31 2007-Jan 2, 2008.
31. Gupta, A. K.: Ultra-high Temperature Steam Gasification of Coal and biomass for Enhanced Hydrogen Production, Invited Keynote lecture at 13th International Symposium on Advanced Technologies and Applications, Pusan, Korea, November 1-3, 2007.
32. Gupta, A. K.: High Temperature Air Combustion: Energy Savings, Pollution Reduction and Fuel Reforming, Invited Lecture, AFRC/JFRC Int'l Symposium at the Marriott Waikoloa, Hawaii, Oct. 22-24, 2007.
33. Gupta, A. K.: High Temperature Air Combustion and Fuel Reforming, 5th Mediterranean Combustion Symposium, Monastir, Tunisia, September 10-13, 2007.
34. Gupta, A. K: Clean Power Generation from Wastes using High Temperature Air Combustion Technology, Invited Keynote Lecture at 2nd Joint Intl. Conference on Sustainable Energy and Environment, Bangkok, Thailand, November 21-23, 2006
35. Gupta, A. K.: Hydrogen Production from Wastes, Biomass and Coal using Steam Gasification, Invited Keynote lecture at 12th International Symposium on Advanced

Technologies and Applications, Pusan, Korea, November 8-11, 2006.

36. Gupta, A.K.: Clean Power Generation from Wastes using High Temperature Air Combustion Technology, 1st Intl. Conference Energy 2030 Conference, Abu Dhabi, UAE, November 1-2, 2006.
37. Gupta, A. K.: Clean Power Generation from Fuels using High Temperature Air Combustion Technology, Keynote Lecture at Sustainable Energy and environment Conference, Bangkok, Thailand, November 21-23, 2006.
38. Gupta, A. K.: Flameless Oxidation of Fuels and its Application to Industrial Furnaces, Keynote Lecture at 7th European Conference on Industrial Furnaces and Boilers (INFUB-7), Porto, Portugal, April 18-21, 2006.
39. Gupta, A. K.: High Temperature Air Combustion (Flameless Oxidation) and Fuel Reforming, Invited Lecture at 42nd AIAA Aerospace Sciences Meeting, Reno, NV, Jan 9-12, 2006.
40. Gupta, A. K.: Clean Energy Conversion from Wastes, Keynote Lecture, 1st Brazilian Conference, Port Allegre, Brazil, December 5-7, 2005.
41. Gupta, A. K.: Advanced Laser Diagnostics for Combustion, Keynote Lecture at 13th Intl. Symposium on Laser Spectroscopy, KAERI, Taejon, Korea, November 3-4, 2005
42. Gupta, A. K.: Challenges and Opportunities for Solid Wastes, Invited presentation, ASME Computers and Information in Engineering (CIE) Conference, Long Beach, CA, September 24-28, 2005, Paper No. DETC2005/CIE-84607
43. Rafidi, N., Blasiak, W. and Gupta, A. K.: High Temperature Air Combustion and its Thermodynamics, Invited Keynote, XIX National Congress of Thermodynamicist, September 5-8, 2005, Sopot, Poland, pp. 43-56.
44. Gupta, A., K.: Clean Energy Conversion from Wastes, Invited Keynote, Proc. 19th International Symposium on Combustion Processes, Wisla, Poland, August 30-September 2, 2005, pp. 41-62.
45. Gupta, A. K.: Clean Energy Production from Wastes and Plastics, Plenary Lecture at 3rd Regional Conference on Energy Technology towards a Clean Environment, Cha-Am, Bangkok, Thailand, December 1-3, 2004.
46. Gupta, A. K., and Archer, S: Confinement Effects on the Dynamics of Swirl Stabilized Gaseous Fuel Flames, Invited Lecture at National Heat Transfer Society of Japan Conference, Toyama, Japan, May 26-28, 2004.
47. Gupta, A. K.: High Temperature Air Combustion Technology: Applications and Challenges, International Flame Research Foundation (IFRF) Topic Orientated Technical Meeting (TOTeM), Stockholm, Sweden, October 23-24, 2003.
48. Gupta, A.K.: Thermal Destruction and Energy Recovery from Wastes, Invited Plenary lecture, Gifu Energy Symposium, Gifu, Japan, Oct. 2-3, 2003.
49. Gupta, A. K.: High Temperature Air Combustion Technology, Invited Plenary Lecture, 18th International Symposium on Combustion, Polish Academy of Sciences, Ustron, Poland, Sep. 2-5, 2003.
50. Gupta, A. K.: High Temperature Air Combustion Technology—Invited Review, AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Huntsville, AL, July 20-23, 2003.
51. Gupta, A. K.: Clean Energy from Wastes using High Temperature Air Combustion Technology, 2nd Regional Conference on Energy Technology Towards a Clean Environment (RCETCE), Phuket, Thailand, Feb. 12, 2003.
52. Gupta, A. K.: Thermal Destruction Analysis of Wastes, National Technical University, Athens, Greece, November 26, 2002.
53. Gupta, A. K.: Technological Evolution, Challenges and Future Prospects for High Temperature Air Combustion (HiTAC) Technology, National Technical University,

Athens, Greece, November 25, 2002.

54. Gupta, A. K.: Flame Length and Ignition Delay Time of Acetylene in High Temperature Combustion Air, 5th International Symposium on High Temperature Air Combustion and Gasification, Tokyo Institute of Technology, Japan, October 28-30, 2002. Also presented at 2nd AC Meeting, Stockholm, Sweden, November 11, 2002.
55. Gupta, A. K.: High Temperature Air Combustion and Its Applications, Vanderbilt University, Nashville, TN, February 25, 2002.
56. Gupta, A. K: High Temperature Air Combustion: Experiences for the USA-Japan Joint Energy Project, 4th International Symposium on High Temperature Air Combustion and Gasification, Rome, Italy, November 26-30, 2001.
57. Gupta, A. K.: The Potential of High Temperature Air Combustion for Gas Turbines, Allstom Power Technology Ltd., Baden, Switzerland, April 2, 2001.
58. Gupta, A.K.: Swirl Assisted Combustion, Invited Lecture at the University of Pennsylvania, PA, Department of Mechanical Engineering, January 25, 2001.
59. Gupta, A. K.: Experiences from the USA-Japan Joint Energy Project during the 1990s, Forum on Development of Energy Sources which are Kind for Earth, Nagoya University, Japan, December 21, 2000.
60. Gupta, A. K.: Experiences in the UK and USA, Lecture to the Undergraduate Students Classroom teaching at Nagoya University, Japan, December 20, 2000.
61. Gupta, A. K.: Swirl in Combustion Flows, Invited Lecture at Rensellaer Polytechnic Institute, Troy, New York, Dept. of Mechanical and Aerospace Engineering, October 27, 2000.
62. Gupta, A.K.: High Temperature Air Combustion: Flame Characteristics, Challenges and Opportunities, Invited Lecture at the 12th International Symposium on Transport Phenomena, ISTP-12, Istanbul, Turkey, July 16-20, 2000.
63. Gupta, A. K.: Flame Characteristics with High Temperature Air Combustion and Future Challenges, Special Contribution at the Eco-Micro Energy System Symposium and Preliminary Discussion of IJPGC 2000, Hokkai Gakuen University, Sapporo, Japan, June 15-16, 2000, pp. 1-18.
64. Gupta, A. K.: Program and Plans for IJPGC 2000 to be held in Miami, Invited Presentation at the Eco-Micro Energy System Symposium and Pre-IJPGC 2000, Hokkai Gakuen University, Sapporo, Japan, June 15-16, 2000.
65. Gupta, A. K.: Flame Characteristics and Challenges with High Temperature Air Combustion, Invited lecture at International Symposium of High Temperature Air Combustion and Applications, May 16-18, 2000, Hsinchu, Taiwan, sponsored by The Taiwan Energy Commission, Taiwan Ministry of Economic Affairs and Industrial Technology Research Institute and The Combustion Institute of ROC.
66. Gupta, A. K.: Thermal Characteristics of Gaseous Fuel Flames using High Temperature Air, Invited lecture at the CREST 3rd International Symposium on High Temperature Air Combustion and Gasification, Yokohama, Japan, March 7-9, 2000.
67. Gupta, A.K.: Flame Characteristics and Challenges with High temperature Air Combustion, Invited Lecture, Invited Lecture, Proc. 2nd International Seminar on High Temperature Combustion in Industrial Furnaces, Stockholm, Sweden, January 17-18, 2000.
68. Gupta, A. K.: Advanced Combustion Research Studies at the UMD, Invited Lecture at Northeastern University, Department of Mechanical Engineering, Boston, MA, December 9, 1999.
69. Gupta, A.K. and Hasegawa, T.: High Temperature Air Combustion: Flame Characteristics, Challenges and Opportunities, Invited Lecture, Proc. of High

Temperature Air Combustion Symposium, Sponsored by NEDO, JIFMA, JSUP and MITI, Tokyo, Japan, October, 1999, pp. 10-28.

70. Gupta, A.K.: Highly Preheated Air Combustion and Future Scope, Invited paper presented at Forum on High Performance Industrial Furnace and Boiler, Science Hall, Science Museum, Tokyo, Japan, Japan, March 8-9, 1999, sponsored by Japan Industrial Furnace Manufacturers Association (JIFMA), New Energy Development Organization (NEDO) and Ministry of International Trade and Industry (MITI).
71. Gupta, A.K.: Air Preheat and Oxygen Concentration Effects on the Thermal Behavior of Propane and Methane Diffusion Flames, Invited lecture at the 2nd International High Temperature Air Combustion (HTAC) Symposium, Sponsored by the Ministry of Economic Affairs, Energy Commission and Energy Resources Laboratories/ITRI, Kaohsiung, Taiwan, Jan. 20-22, 1999.
72. Gupta, A. K.: Flame Characteristics and Challenges with High Temperature Air Combustion, Invited Paper, Intl. MHD Conference, Beijing, China, October 13, 1999.
73. Gupta, A. K. and Hasegawa, T.: High Temperature Air Combustion: Flame Characteristics, Challenges and Opportunities, Invited paper, High Temperature Air Combustion Symposium, Beijing, China, October 18-19, 1999.
74. Gupta, A.K.: Thermal Destruction of Solid Wastes, Invited Keynote Lecture on December 2nd at the 2nd Intl. Symposium on Advanced Energy Conversion and Related Technologies (RAN98), Nagoya University, Nagoya, Japan, December 1-3, 1998, Proc. RAN-98 conference, pp. 108-115.
75. Gupta, A. K.: Combustion Research Activities at the University of Maryland, Tokyo Gas Company, Tokyo, Japan, December 3, 1998.
76. Gupta, A. K.: Combustion Instability in Swirl Combustors, Invited lecture Presented at Toshiba Corporation, Combustion Technology Division, Tsurumi-ku, Yokohama, Japan, December 4, 1998.
77. Gupta, A. K.: Fuel Property Effects on the Thermal Characteristics of High Temperature Air Flames, Invited presentation at the RG Meeting, Tokyo, Japan, June 2, 1998.
78. Gupta, A. K.: Role of Fuel Property on the Thermal Characteristics of High Temperature Air Combustion Flames, Invited Lecture at Toyota Central Research Laboratories, Toyota City, Japan, May 25, 1998.
79. Gupta, A. K.: Advantages of High Temperature Air Combustion, Invited Lecture at Mie University, May 29, 1998.
80. Danov, S. N., Gupta, A. K., and Arai, N: Influence of Imperfections in Working Media on Diesel Engine Indicator Process: Part 1-Theory, May 27, 1998, Japan 35th Heat Transfer Conference, Nagoya, Japan, May 27-29, 1998, pp. 263-264.
81. Danov, S.N., Gupta, A.K., and Arai, N.: Influence of Imperfections in Working Media on Diesel Engine Indicator Process: Part 2-Results, May 27, 1998, Japan 35th Heat transfer Conference, Nagoya, Japan, May 27-29, 1998, pp.265-266.
82. Danov, S.N., Arai, N. and Gupta, A.K.: Effect of Fuel Injection Rate on Heat transfer in a Diesel Engine During the Combustion Process, Japan 35th Heat transfer Conference, Nagoya University, Japan, May 27-29, 1998, pp.551-552.
83. Gupta, A. K.: Role of Swirl and Combustion Air Distribution in a Swirl Burner on the Flame Thermal and Combustion and Emission Characteristics, Invited Presentation at Concordia University, Mechanical Engineering Seminar Series, Montreal, Canada, October 10, 1997.
84. Gupta, A. K.: Experimental and Numerical Studies on Highly Preheated Air Combustion, Invited Presentation at the 9th RG Committee Meeting of the NEDO Project "New Industrial Furnaces of Higher Thermal Efficiency, NFK, Tokyo, Japan, January 13, 1997.

85. Gupta, A. K.: Numerical Simulation of Highly Preheated Air Combustion Using Methane as the Fuel, Invited Presentation at the 8th RG Meeting of the NEDO Project "New Industrial Furnaces of Higher Thermal Efficiency, Osaka University, June 19, 1996.
86. Gupta, A. K.: The Potential of Highly Preheated Air Combustion, Invited Lecture at the High Temperature Combustion for Industrial Processes, Sponsored by Jernkontoret and KTH Royal Institute of Technology, Stockholm, Sweden, June 6, 1996.
87. Gupta, A. K.: Challenges in High Temperature Air Combustion, Invited Presentation at the 7th RG Meeting of the National High Temperature Combustion Project, Tokyo, Japan, December 7, 1995.
88. Gupta, A. K.: Gas Turbine Combustion: Prospects and Challenges, Invited Lecture at International Symposium on Advanced energy Conversion and Related technologies, December 4-6, 1995, Proc. RAN 95, pp. 337-343.
89. Gupta, A. K.: Research and Development Needs for High Temperature Excess Enthalpy Combustion, Invited Presentation at the 6th RG Meeting of the National High Temperature Combustion Project, Tokyo Gas Company, Tokyo, Japan, May 26, 1995.
90. Gupta, A. K.: Gas Turbine Combustion—Prospects and Challenges, Invited Keynote Lecture at the Opening Ceremony of the 35th Israel Aerospace Sciences Conference, Tel-Aviv, Israel, February 15, 1995.
91. Gupta, A. K.: Basic Research Needs in Ultra High Preheated Air Temperature Combustion, Invited lecture at the 5th RG Meeting held at NFK on High Temperature Combustion National Project, Tokyo, Japan, December, 16, 1994.
92. Gupta, A. K.: Research and Development Needs for High Enthalpy Combustion, Invited lecture at 4th RG Meeting, May 14, 1994, Nagoya University, Nagoya, Japan.
93. Gupta, A. K.: Discrete Thermal Loading Technology Using High Enthalpy Combustion, Invited presentation at JSUP, Tokyo, Japan, May 17, 1994.
94. Gupta, A. K.: Combustion Diagnostics in Excess Enthalpy Flames, 3rd RG Meeting held at Hokkaido University, Sapporo, Japan, February 4, 1994.
95. Gupta, A. K.: Combustion Diagnostics in High Temperature Flames, Invited Presentation in Tokyo organized by JIFMA, NEDO and MITI, February 2, 1994.
96. Gupta, A. K.: Low NOx Emission using a Multi-Annular Swirl Burner, Invited Lecture, Rolls Royce Plc., Derby, England, UK, September 6, 1991.
97. Gupta, A. K.: Non-Intrusive Combustion Diagnostics, Invited lecture at Concordia University, Montreal, Canada, September 13, 1991.
98. Gupta, A. K.: Multi-Annular Swirl Combustion, Invited Seminar in the Department Lecture Series at Department of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, October 3, 1989.
99. Gupta, A. K.: Combustion in Swirl Flows, Invited Seminar at Cairo University, Cairo, Egypt, November, 22, 1989.

PUBLICATIONS

Reviewed Journal Publications

1. Gupta, A. K., Syred, N. and Beér, J. M.: A Low-Noise Burner for Swirl Stabilized Natural Gas Flames, J. Inst. Fuel, March, 1973, p. 119-123.

2. Syred, N., Hanby, V. I. and Gupta, A. K.: Resonant Instabilities Generated by Swirl Burners, J. Inst. Fuel, December, 1973, p. 402-407.

3. Gupta, A. K., Syred, N. and Beér, J. M.: Die Verminderung der Schallabstrahlung von Drallbrennkammern durch stufenweise Verbrennung, Gas Wärme International, 23, No. 2, Feb. 1974, p. 39-45, also VDI-Berichl No. 211.

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