

PRABHAKAR MISRA

***Professor of Physics & Fellow of The American Physical Society (APS),
Fulbright Scholar & NASA Administrator's Fellow***

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Wikipedia Page: http://en.wikipedia.org/wiki/Prabhakar_Misra

EDUCATION

Ph.D. (Physics), The Ohio State University, Columbus, OH, 1986.

M.S. (Physics), Carnegie-Mellon University, Pittsburgh, PA, 1981.

M.Sc. (Physics), University of Calcutta, India, 1978.

B.Sc. (Physics Hons.), St. Xavier's College, University of Calcutta, India, 1975.

EMPLOYMENT & PROFESSIONAL APPOINTMENTS

Professor, Department of Physics & Astronomy, Howard University, 1997-present

Director of Undergraduate Studies, Department of Physics & Astronomy, Howard University, 2018-present

Chair, Department of Physics & Astronomy, Howard University, 2010-14

Chair, Division of Natural Sciences, College of Arts & Sciences, Howard University, 2012-14

President, Sigma Xi –The Scientific Research Society - Howard University Chapter, 2013-14

Research Affiliate & Investigator, National Consortium for the Study of Terrorism & Responses to Terrorism (START), University of Maryland, College Park, MD, 2014-present

Director of Graduate Studies, Department of Physics & Astronomy, Howard University, 2006-10

Visiting Scientist/NASA Affiliate, Planetary Environments Laboratory (PEL), Goddard Space Flight Center, Greenbelt, MD, 2010-present

NASA DC Space Grant Consortium Faculty Fellow, Summer 2010 & 2009: Goddard Space Flight Center, Atmospheric Experiments-Planetary Environments Laboratory/Code 699

NAI-MIRS Faculty Fellow, Summer & Fall 2008, & Summer 2012, Atmospheric Experiments-Planetary Environments Laboratory/Code 699, NASA Goddard Space Flight Center

NASA ESMD Faculty Fellow, Summer 2007: Langley Research Center, Hampton, VA, & Goddard Space Flight Center, Laser & Electro-Optics Branch/Code 554, & Summer 2008: Goddard Space Flight Center, Laser & Electro-Optics Branch/Code 554, Greenbelt, MD

Fulbright Scholar & Visiting Professor, Department of Chemical Sciences, Tata Institute of Fundamental Research, Mumbai, India, 2004-05

NASA Administrator's Fellow, Aeronautics & Space Engineering Board, The National Academy of Sciences, Washington, DC, 2000-01

NASA Administrator's Fellow, Laser & Electro-Optics Branch/Code 554, NASA Goddard Space Flight Center, Greenbelt, MD, 1999-2000

Associate Professor (Tenured), Department of Physics & Astronomy, Howard University, 1992-97

Assistant Professor, Department of Physics & Astronomy, Howard University, 1988-92

Visiting Scholar, Department of Chemistry, Northwestern University, Evanston, IL, 1990

Postdoctoral Research Fellow, Laser Spectroscopy Facility, The Ohio State University, Columbus, OH, 1986-88

HONORS & AWARDS

- **Nominated for the 2020 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM)**, National Science Foundation, Alexandria, VA
- **Nominated for the 2019 American Association for the Advancement of Science (AAAS) Lifetime Mentor Award**, American Association for the Advancement of Science, Washington, DC
- **Robert H. Goddard 2018 Team Award** for Exceptional Achievement for Science, as part of the DREAM2 Center for Space Environments, NASA Goddard Space Flight Center. The citation certificate given on May 16, 2019, reads “*For exceptional applications of space environmental science to exploration endeavors.*”
- **Recognized by the Optical Society of America Foundation (OSAF) “Honor Your Mentor”** for Exemplary Mentoring Upon the Recommendation of Dr. Tariq Ahmido, NIST, Gaithersburg, MD (2016) [http://www.osa.org/en-us/foundation/tributes/honor_mentor/]
- **Elected Fellow of the American Physical Society (APS)**, 2015. The citation of the Fellowship Certificate presented by the Division of Condensed Matter Physics reads “*For sustained contributions to the spectroscopy of the condensed phases and commitment and exemplary mentoring of underrepresented students.*” Election to Fellowship in APS is an honor and distinction, in that it is limited to no more than one half of one percent of the membership of the American Physical Society.
- **Selected MSI DHS Summer Faculty Fellow**, May-August 2014, University of Maryland, START-Department of Homeland Security (DHS) Center of Excellence, & Visiting Faculty/Affiliate 2015-16 on a follow-up grant
- **President, Howard University Chapter of Sigma Xi – the Scientific Research Society**, 2013-14
- **Best Research Paper Award**, Optoelectronics, Photonics & Applied Physics (OPAP) Annual International Conference, Singapore, February 4-5, 2013
- **NASA Astrobiology Institute Minority Institute Research Support (NAI-MIRS) Program Award** (June-August, 2012; Sample Analysis at Mars (SAM) Project, NASA Goddard Space Flight Center, Greenbelt, MD), followed by a research award “*Fluorescence and Raman Spectroscopy of Organic Molecules of Relevance to the Spectral Library of Potential Contaminants for the Mars Science Laboratory Mission*” (September 2012-June 2013)
- **NASA DC Space Grant Consortium Faculty Fellowship Award** (June-August 2010 & 2009) Target Organic Contaminant Library Development in Support of the Sample Analysis at Mars (SAM)

Instrumentation Measurements for the Mars Science Laboratory, Atmospheric Experiments - Planetary Environments Laboratory/Code 699, Goddard Space Flight Center, Greenbelt, MD

- **NASA Astrobiology Institute Minority Institute Research Support (NAI-MIRS) Program Award** (June-December 2008; Sample Analysis at Mars (SAM) Project, NASA Goddard Space Flight Center, Greenbelt, MD)
- **Alfred P. Sloan Foundation Certificate of Appreciation** (January 25, 2008) for commitment to advancing underrepresented minority students in Mathematics, Science, & Engineering, and for leadership in the Sloan Foundation Minority Ph.D. program
- **NASA ESMD Faculty Fellowship Award** (June-August 2007 & June 2008), NASA, Kennedy Space Center, FL, & NASA HQ, Washington, DC
- **Fulbright Scholar Award** (Dec 2004 - Aug 2005), J. William Fulbright Foreign Scholarship Board, Washington, DC (Tata Institute of Fundamental Research, Colaba, Mumbai, India)
- **NASA Administrator's Fellowship Program Award** (July 1, 1999-August 15, 2001), National Research Council, Washington, DC
- **Johnetta G. Davis Student Service Award** (May 1998), Graduate School of Arts & Sciences, Howard University, Washington, DC
- **Professional Profile Cited in Marquis Who's Who in Science & Engineering** (1992-93); a Companion Volume to Who's Who in America, and in *Who's Who Among America's Teachers* (1996 & 2006-07)
- **Researcher of the Month** (April 1993), BIOS, Graduate School of Arts & Sciences, Howard University, Washington, DC

CONFERENCE PROGRAM COMMITTEES & SESSIONS CHAIR

Symposium Co-Chair, Optoelectronic Properties & Characterization of Emergent Semiconductor Materials, 26th International Conference on Computational & Experimental Engineering and Sciences, ICCES 2020-21, Phuket, Thailand, January 6-10, 2021.

Invited Plenary Speaker & Sessions Co-Chair, First North Indian Science Congress, Babarao Bhimsaheb Ambedkar University, Lucknow, Uttar Pradesh, India, January 10-11, 2018.

Invited Speaker, International Conference on Computational & Experimental and Engineering Sciences (ICCES 2017), Funchal, Madeira Island, Portugal, June 26-30, 2017.

Invited Speaker and Session Chair, IC-EEE 2015 - International Conference on Energy Harvesting Storage and Conversion, February 4-7, 2015, Cochin University of Science and Technology, Cochin, India.

Invited Speaker and Plenary Session Co-Chair, 17th International Workshop on Physics of Semiconductor Devices (IWPSD 2013), Amity University, Noida, India, December 10-13, 2013.

Sessions Chair, Day 2, Annual International Conference on Optoelectronics, Photonics & Applied Physics (OPAP), February 4-5, 2013, Singapore.

Nanotechnology Sessions Chair, XVI International Workshop on the Physics of Semiconductor Devices, IWPSD 2011, IIT Kanpur, India, December 19-22, 2011.

Member of Program Committee and Chair of Sessions: International Conference on LASERS '93 (Lake Tahoe, NV, Dec 93); LASERS '94 (Quebec, Canada, Dec 94), LASERS '95 (Charleston, SC, Dec 95), LASERS '96 (Portland, OR, Dec 96), LASERS '97 (New Orleans, LA, Dec 97), LASERS '98 (Tucson, AZ, Dec 98), LASERS '99 (Quebec, Canada, Dec 99), LASERS 2000 (Albuquerque, NM, Dec 2000), LASERS 2001 (Tucson, AZ, Dec 2001); ICCES '09 (Phuket, Thailand, April 2009); ICCES '10 (Las Vegas, Nevada, March 28-April 1, 2010).

RESEARCH PROPOSAL REVIEWER

NASA Postdoctoral Program (NPP) Reviewer, Universities Space Research Association (USRA), 2019 & 2016

National Science Foundation (NSF), Arlington, VA, HBCU-UP Proposal Reviewer, 2013; and Major Research Instrumentation, 2014

Research Corporation/Cottrell College Science Award Program, Tucson, AZ, 2006, in the area of Laser Optogalvanic Spectroscopy

National Science Foundation (NSF), Arlington, VA, 1994, 1996, 2003 & 2004, in the areas of Spectroscopy, Chemical Physics & Physical Chemistry

Petroleum Research Fund of The American Chemical Society (ACS), Washington, DC, 2003, in the area of Organic Nanocrystals.

Thomas F. & Kate Miller Jeffress Memorial Trust/Bank of America, Commonwealth of Virginia, 1999

National Institutes of Health (NIH), Department of Health and Human Services, Bethesda, MD, 1994, in the area of Biomedical Research

Agency for International Development (AID), Washington, DC, 1993, in the area of Laser Optics

GUEST REVIEWER/REFEREE/EDITOR FOR RESEARCH JOURNALS

Journal of Physical Chemistry (1999); *Journal of Propulsion & Power* (2001); *Physica B* (2001); *Journal of Geoscience Education* (2006); *Journal of Chemical Engineering Communications* (2007); *Journal of Computer Modeling in Engineering & Sciences* (2007-08); *Journal of Lightwave Technology* (2008); *Computers, Materials & Continua* (2007-09); *Journal of Quantitative Spectroscopy & Radiative Transfer* (2009); *Journal of Molecular Structure* (2011); *Remote Sensing* (2012); *Applied Optics* (2012)

PANEL MEMBERSHIPS

Harriett Jenkins Pre-doctoral NASA Fellowship Panel (2003)

NASA Administrator's Fellowship/TADSBAT Panel (2003)

Faculty Consultant and Reader, College Board/Educational Testing Service (ETS), Princeton, New Jersey, (2003 & 2004)

Member of Scientific Community & Jury Panel, XXI International Conference of Young Otorhinolaryngologists, St. Petersburg, Russia, (2004)

Yale University Advanced Placement (AP) Physics Evaluator (2005 - 06)

American Society for Engineering Education (ASEE), NDSEG Panel Member & Physics Evaluator (2007-08; 2009-10)

Designated Howard University Representative on the Universities Space Research Association (USRA) Council of Institutions (2009)

ASEE-NASA Undergraduate Fellowship Program Panel (2010)

ASEE-ONR Summer Faculty Program Panel (2010-12)

NASA Aeronautics Scholarship Program Evaluation Panel (2011)

National Defense Science and Engineering Graduate (NDSEG) Fellowship Panel (2011)

NASA URC Virtual Poster Session and Symposium Judge (2012)

NSF Graduate Research Fellowship Program Physics 1 and Astronomy Panelist (2012 & 2014-15)

Fulbright Specialist Program Peer Review Panel in Physics Education (2011-13)

Expert Judge, Toshiba/National Science Teachers Association (NSTA) ExploraVision Evaluation Panel, Regional Judges Meeting, February 23, 2014, Arlington, VA

NASA Postdoctoral Program (NPP) Reviewer, Universities Space Research Association (USRA) (2019 & 2016)

National Science Foundation (NSF) Panel Reviewer (2017-18, 2019-20)

Judge, Outstanding Student Presentation Award (OSPA), Fall 2019 American Geophysical Union (AGU) Meeting, San Francisco, CA, December 9-13, 2019

PROFESSIONAL AFFILIATIONS (Past & Present)

Member

The New York Academy of Sciences (NYAS)

American Association for the Advancement of Science (AAAS)

American Association of University Professors (AAUP)

American Mensa

Society of Photo-Optical Instrumentation Engineers (SPIE)

Sigma Pi Sigma (SPS) Honor Society

Sigma Xi, The Scientific Research Society

Senior Member

The Optical Society of America (OSA)

Fellow

The American Physical Society (APS)

American Society for Laser Medicine & Surgery (ASLMS)

Life Member

Fulbright Association, Washington, D.C.

President

Howard University Chapter of Sigma Xi – The Scientific Research Society (2013-14)

FUNDED RESEARCH PROPOSALS

1. "DNA Repair & Genetic Regulation in *Vibrio Cholerae*", Lady Tata Memorial Trust, Bombay, India, 1979 (\$300; PI: **P. Misra**).

2. "Flash Photolysis Studies with a 10-Meter Czerny-Turner Spectrograph", The Graduate School of Arts & Sciences, The Ohio State University, Columbus, OH, 1985 (\$700; PI: **P. Misra**).

3. "Absorption of Infrared & Visible Laser Radiation by Liposomes and Organic Dyes", SDIO, The Pentagon, Medical Free Electron Laser Program, Washington, DC, 1990-91 (\$77,490; PI: **P. Misra**).

4. "Laboratory for Extraterrestrial Chemistry: A Core Facility at Howard University", Washington, DC, 1990-92 (\$55,000; PI: J. Halpern, Co-PIs: **P. Misra**, H. Okabe, J. Frye, C. Kumar, L. Klein & V. Kushawaha).

5. "Laser Spectroscopy of Alkoxy Radicals in a Supersonic Jet", Faculty Research Support Grant Program, Howard University, Washington, DC, 1989-90 (\$49,990; PI: **P. Misra**).

6. "Laser Irradiation of Liposomes containing Encapsulated & Membrane-Bound Dyes", Faculty Research Support Grant Program, Howard University, Washington, DC, 1990-91 (\$44,780; PI: **P. Misra**).

7. "Laboratory for Combustion Research", Collaborative Core Unit, Graduate School of Arts & Sciences, Howard University, Washington, DC, 1992-94 (\$20,500 for 92-93 and \$10,000 for 93-94; PI: J.N. Cannon, Co-PIs: **P. Misra**, V. Kushawaha, and R.C. Chawla).

8. "Laser Spectroscopy of Combustion Intermediates in a Supersonic Jet Expansion", Wright-Patterson Air Force Base, OH, 1990-94 (\$170,332; PI: **P. Misra**).
9. "Computer-Assisted Information Age Education for the Physics Department", Pew Charitable Trust Educational Grant through the Graduate School of Arts & Sciences, Howard University, Washington, DC, 1993-94 (\$ 26,817; PI: **P. Misra**, Co-PI: T. Hubsch).
10. "Spectroscopic Investigations of Chemical Intermediates of Environmental Significance", U.S. Environmental Protection Agency, Washington, DC, 1993-1997 (\$265,740; PI: **P. Misra**).
11. "Free Radical Spectroscopy and Kinetics in Microgravity Combustion", National Aeronautics & Space Administration, Glenn Research Center, Cleveland, OH, 1994-98 (\$362,271; PI: **P. Misra**).
12. "Center for the Study of Terrestrial and Extraterrestrial Atmospheres", National Aeronautics & Space Administration, Washington, DC, 1992-2007 (\$10.0+ Million; Director/PI: J. Gates/A.N. Thorpe/D.D. Venable, PIs: **P. Misra** et al (1992-96) & Associate PI: **P. Misra** et al (1997-2007).
13. "NASA Administrator's Fellowship Program", National Research Council, Washington, DC, 1999-2001 (\$ 217,076; PI: **P. Misra**).
14. "Conference on Lasers & Electro-Optics (CLEO)/Quantum Electronics & Laser Science (QELS), Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2002 (\$3,000; PI: **P. Misra**).
15. "Development of an Interdisciplinary Microcomputer-Based Teaching & Learning Platform to Enhance Understanding of Spectroscopy Associated with Physics & Biophysical Phenomena," Proposal to Stimulate Research on Teaching & Learning, Graduate School of Arts & Sciences, Howard University, Washington, DC, 2002 (\$2,000; PI: **P. Misra**).
16. "The 17th International Conference on High Resolution Molecular Spectroscopy," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2002 (\$3,300; PI: **P. Misra**).
17. "Conference on Physics on the Road," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2003 (\$2,400; PI: **P. Misra**).
18. "Development of an Earth & Space Science-Focused Education Program," American University & DC Space Grant Consortium, NASA, Washington, DC, 2002-04 (\$25,126; PI: **P. Misra**).
19. "Spectroscopic Investigation and Clinical Applications Related to Calcified Tissue in Teeth," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2003-04 (\$5,000; PI: **P. Misra**).
20. "Development of an Earth & Space Science-Focused Education & Research Program at Howard University," Universities Space Research Association & NASA, Washington, DC, 2004-07 (\$87,293; PI: **P. Misra**, Co-PIs: V. Morris & G. Carruthers).
21. "Earth System Science Education Modules for the Washington, DC Area," Universities Space Research Association & NASA, Washington, DC, 2005-06 (\$17,293; PI: **P. Misra**, Co-PIs: G. Carruthers, A. Adebayo & F.M. Dixon).
22. "ONR/HBEC Future Engineering Faculty Fellowship for Graduate Student Support," North Carolina A&T University/Office of Naval Research, Greensboro/Arlington, VA, 2006-present (\$76,868; PI: **P. Misra**).
23. "Integration of Multisim and LabVIEW for Physics Laboratory Courses and Undergraduate Laboratory Research," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2007-08 (\$5,000; PI: **P. Misra**).
24. "Integration of Multiphysics Modeling in the Special Topics Course in Laser Spectroscopy and in Undergraduate Research," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2008-09 (\$5,000; PI: **P. Misra**).
25. "Spectroscopy and Analytical Protocols for Organic Molecules of Relevance to the Origin of Life on Mars and Earth," NASA Astrobiology Institute Minority Institute Research Support (NAI-MIRS) Program, Tennessee State University, Nashville, TN, 2008 (\$25,000; PI: **P. Misra**).

26. "Modeling and Analysis of Rocket Plume RF-Line Emissions," Missile Defense Agency, Washington, DC, 2008-10 (\$300,000; PI: **P. Misra**).
27. "Multiphysics Modeling of RF-Line Emission Spectra of Molecular Species in Plumes and Discharges for Enhancing the Statistical Mechanics Course and Graduate Research in Molecular Spectroscopy," Fund for Academic Excellence, Office of the Provost, Howard University, Washington, DC, 2009-10 (\$4,000; PI: **P. Misra**).
28. "Fluorescence and Raman Spectroscopy of Organic Molecules of Relevance to the Spectral Library of Potential Contaminants for the Mars Science Laboratory Mission," UNCFSP-NASA, Washington, DC, 2012-13 (\$10,000; PI: **P. Misra**).
29. "Low Gravity Gas-Liquid Contactor," NASA Reduced Gravity Program, Washington, DC, 2013 (\$5,000; PI: **P. Misra**).
30. "TARGETED INFUSION GRANT: Enhancement of the Undergraduate Physics Program in the Department of Physics & Astronomy at Howard University," National Science Foundation, Arlington, VA, 2012-17 (\$330,798; PI: **P. Misra** and Co-PIs: D. Venable, G. Jenkins & B. Demoz).
31. "Acquisition of Terahertz Spectrometer for Research & Education at Howard University," Equipment/Instrumentation Program, Army Research Office, Research Triangle Park, NC, 2016-17 (\$375,000; PI: T.A. Searles, Co-Is: **P. Misra** et al.)
32. "Acquisition of a FERIE Aberration-Free Spectrometer," Research Resources and Small Equipment Program, Howard University, Washington, DC, 2017 (\$48,402; PI: T.A. Searles, Co-Is: Q. Williams, **P. Misra** et al.)
33. "REU Site in Physics at Howard University," National Science Foundation, Arlington, VA, 2014-19 (\$280,469; PI: **P. Misra** and Co-PI: Q. Williams) and 2017-20 (\$305,000; PI: **P. Misra** and Co-PI: S. Gatica).
34. "PAC Involved: Engaging Students in Physics, Astronomy & Cosmology (PAC) Learning through Re-Purposing of Popular Media," National Science Foundation, Arlington, VA, 2013-15 (\$357,522; PI: I. Fotiyeva and Co-PIs: **P. Misra** et al.).
35. "Acquisition of a PET/CT Imaging Machine for STEM Research & Education at Howard University," Department of Defense (DOD) HBCU/MI Equipment/Instrumentation Program, Washington, DC, 2017-18 (\$590,869; PI: P. Wang and Co-Is: M. Mosleh, **P. Misra**, O. Bakare and Y. Wu).
36. "Dynamic Response of the Environments at Asteroids, the Moon, and moons of Mars (DREAM2)," NASA, Washington, DC, 2014-19 (Subcontract to Howard University: \$52,000; PI: W. Farrell and Co-Is: **P. Misra**, L. Bleacher et al.).
37. "Development & Optimization of Machine Learning Algorithms & Models of Relevance to START Databases (START – National Consortium for the Study of Terrorism & Responses to Terrorism, University of Maryland)," Department of Homeland Security (DHS), Washington, DC, 2015-16 (\$50,000; PI: **P. Misra**).
38. "NASA Early Opportunities Program for Underrepresented Minorities in Earth and Space Sciences," NASA, Washington, DC, 2016-20 (\$499,771; PI: **P. Misra**; Co-PI: D. Venable/Howard University), S. Hoban and B. Demoz/University of Maryland, Baltimore County, and B. Meeson/Goddard Space Flight Center).
39. "Lunar Environment And Dynamics for Exploration Research (LEADER)," NASA, Washington, DC 2019-24 (Howard University portion of the award: \$100,000; Co-I: **P. Misra** et al; PI: R. Killen/NASA Goddard Space Flight Center).

40. "MRI: Acquisition of a Physical Property Measurement System to Study Quantum, Magnetic and Functional Materials and Quantum Devices," National Science Foundation (NSF) Major Research Instrumentation (MRI) Program, Alexandria, VA, 2020-23 (\$329,735; PI: Samaresh Guchhait, Co-PIs: Kim Lewis, **Prabhakar Misra**, Tina Brower-Thomas and Tao Wei).

41. "A Materials Characterization and Testing System for Enhancing Transdisciplinary Research and Education at Howard University," Department of Defense (DoD), Defense University Research Instrumentation Program (DURIP), Air Force Office Of Scientific Research (AFOSR), 2020-21 (\$569,904; PI: Hessam Yazdani, Co-PIs: Paul Wang, Claudia C. Martin-Artieda, Jeseth Delgado Vela, Mohsen Mosleh and **Prabhakar Misra**).

TEACHING EXPERIENCE

Statistical Mechanics I (216-222), Fall 2005, 2006, 2007, 2008, 2013, 2014, 2015, 2016, 2017 & 2019 and **Statistical Mechanics II (216-223)**, Spring 1996, 2006, 2007, 2008, 2009, 2014, 2015, 2019 & 2020, Howard University, at the level of "Statistical Mechanics", R.K. Pathria, Pergamon, New York (1994) & "Statistical Physics of Particles," M. Kardar, Cambridge University Press, New York (2007).

Physical Mechanics (PHYS 182 & 183), Fall 2018 & Spring 2019, Fall 2020, at the level of "Classical Mechanics", John R. Taylor, University Science Books, California, 2005 Edition.

Modern Physics (216-200 & 201), Fall 1994, Spring 1995, & Fall 2018, Howard University, at the level of "Introduction to the Structure of Matter: A Course in Modern Physics", J.J. Brehm and W.J. Mullin, John Wiley & Sons, New York (1989).

Physics for Science & Engineering (PHYS 013), Spring 2010, and (PHYS 014), Fall 2009, at the level of "Physics for Engineers & Scientists", H.C. Ohanian & J.T. Markert, 3rd Edition, W.W. Norton, New York (2007).

Physics for Science & Engineering (PHYS 013), Spring 2006 & 2007, and (PHYS 014), Fall 2005, 2006 & 2008 at the level of "Fundamentals of Physics", D. Halliday, R. Resnick & J. Walker, 7th Edition, John Wiley & Sons, New Jersey (2005) & 8th Edition (2008).

Topics in Laser Spectroscopy (216-286-01), Fall 1997 & 2007; 216-287-01, Spring 1998 & 2008, Howard University, at the level of "Laser Spectroscopy: Basic Concepts and Instrumentation", W. Demtroder, 2nd Ed., Springer-Verlag, New York (1996).

Classical Mechanics (216-210 & 211), Fall 1992-93, Fall 1996-97, & Spring 1993-95 & 1998, Howard University, at the level of "Classical Mechanics", H. Goldstein, 2nd Ed., Addison-Wesley, New York (1980).

Graduate Seminar: Introduction to Laser Spectroscopy (216-283-03), Spring 1989, Spring 1990, Spring & Fall 1991, & Spring 1992, Howard University, at the level of "Laser Spectroscopy and Its Applications", L.J. Radziemski, R.W. Solarz and J.A. Paisner (Editors), John Wiley & Sons, New York (1988).

Optics (021-176), Fall 1994 & Fall 1995, Howard University, at the level of "Introduction to Classical & Modern Optics", J.R. Meyer-Arendt, Prentice Hall, New Jersey, 4th Ed., 1995.

Atomic Physics (021-190 & 191; 216-207-03), Fall & Spring 1988-90, Howard University, at the level of "Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles" by R. Eisberg & R. Resnick, 2nd Ed., John Wiley & Sons, New York (1985).

General Physics for Architects (021-008-71 & 81), Summer 1989, Howard University, at the level of "Technical Physics" by F. Bueche, 3rd Ed., Harper & Row, New York (1985).

General Physics Laboratory for Scientists & Engineers (021-025), Fall & Spring 1988-90, Spring & Fall 1991, Spring 1992, Spring 1994 & Spring 1996, Howard University, which included Modern Physics Experiments dealing with: Planck's Constant; Millikan Oil-Drop; Franck-Hertz Critical Potentials; Michelson Interferometer; Atomic Spectra; Bragg Diffraction and Radioactivity.

General Physics Laboratory for Scientists & Engineers (021-024), Fall 1995-96, Howard University, which included Experiments in Electricity, Magnetism & Optics dealing with: Electric Field & Equipotentials; Capacitors, Resistors & Ohm's Law; Networks & Wheatstone Bridge; Oscillators & Oscilloscopes; Electromagnetic Induction; A.C. Circuits; Diffraction Grating; Atomic Spectra and Refraction.

General Physics (021-001 & 002) Recitations, Spring 1991, Fall 1993, Spring 2019 & Fall 2019, Howard University, at the level of "Physics" by J.D. Cutnell and K.W. Johnson, John Wiley & Sons, New York (1989). General Physics Lecture/Recitation/Laboratory (021-002-73 & 83), Summer 1991-93, Howard University, at the level of "Physics" by J.D. Cutnell and K.W. Johnson, John Wiley & Sons, New York (1989).

General Physics (021-002) Recitation, Fall 1988, Howard University, at the level of "College Physics" by R.A. Serway & J.S. Faughn, 1st Ed., Saunders College Publishing, New York (1985).

Physics 131-133 Recitation (& Laboratory), 1981-86, The Ohio State University, at the level of "University Physics" by F.W. Sears, M.W. Zeemansky & H.D. Young, 5th Ed.(1976) & 6th Ed.(1983), Addison-Wesley Publishing Co., Massachusetts.

General Physics I-III Recitation (& Laboratory), 1979-81, Carnegie-Mellon University, at the level of "University Physics" by F.W. Sears, M.W. Zeemansky & H.D. Young, 5th Ed., Addison-Wesley Publishing Co., Massachusetts (1976).

RESEARCH EXPERIENCE

- 1) Raman Spectroscopy and Molecular Dynamics Simulations of Nanomaterials (e.g. carbon nanotubes, pristine & functionalized graphene, tungsten oxide, tin dioxide, etc.), 2009-present.
- 2) Spectroscopic characterization of stable molecules, free radicals, molecular ions and ionic clusters (e.g. I_2 & NO_2 ; alkoxy & alkylthio radicals, $HCCO$ & C_5H_5 ; CO^+ & $C_6F_6^+$; $C_6F_6^+.nHe$) in a supersonic jet expansion employing a photolysis excimer laser and an excimer-pumped tunable dye laser; 1986-present.
- 3) Development of an organic contaminant spectral library as part of the Sample Analysis at Mars (SAM) initiative tied to the 2011 Mars Science Laboratory (MSL) mission. The library utilizes the Automated Mass Spectral Deconvolution and Identification System (AMDIS) software, a NIST/EPA/NIH Mass Spectral Library, NASA/GSFC, 2008-present. It is maintained as part of the XINA database at Goddard.
- 4) Formation and modeling of nanobubbles at the water-graphite interface; Multiscale modeling of nanostructures, 2006-present.
- 5) Detection and spectroscopic characterization of free radicals of relevance to combustion (under normal gravity and microgravity conditions) and atmospheric phenomena (e.g. alkoxy, alkylthio & aromatic radicals) in a supersonic jet expansion employing an excimer laser and Nd:YAG-pumped and excimer-pumped tunable dye lasers; 1988-present.
- 6) Optical-thermal and gravity relief testing of a telescope in support of the Vegetation Canopy Lidar (VCL) mission aimed at characterizing the three-dimensional structure of the earth, NASA/GSFC, 1999-2000.
- 7) Cavity ringdown spectroscopy measurements for determining water vapor concentrations at sub-parts-per-million level, NASA/GSFC, 1999-2000.
- 8) Development of an excimer laser-based lidar system for tropospheric ozone concentration measurements, 1999-2002.
- 9) Absorption of short-pulsed (nsec, psec) Nd:YAG laser radiation in the form of high-energy pulses by liposomes and the subsequent conversion into release of organic dye molecules (e.g. sulforhodamine & methylene-blue) either encapsulated in the internal volume or bound in the membrane bilayer of liposomes; 1990-2000.
- 10) Development of solid state laser technology for tunable laser systems in the ultraviolet using crystals activated by rare-earth ions (for example, $LiCaAlF_6:Ce^{3+}$ and $LiLuF_4:Ce^{3+}$) and a Ti:Sapphire laser for probing

and characterization of free radicals in a flame environment under normal and microgravity conditions; 1994-2004.

11) High Resolution Molecular Spectroscopy in the ultraviolet (of CO⁺ & NCO) employing Czerny-Turner Spectrographs (1981-86) and in the infrared (of NH₃, HCl, NO & SO₂) employing a Fourier Transform Spectrometer (1981-present).

STUDENTS, RESEARCH ASSOCIATES & POSTDOCTORAL FELLOWS SUPERVISED

1. **Jason Michael** (Undergraduate Student: Physics Major). Supported Full Time During Summer 1990 on Funded Research Project: "Absorption of Infrared & Visible Laser Radiation by Liposomes & Organic Dyes" (SDIO, The Pentagon, 1990-91).
2. **LaTonya J. Pegues** (Undergraduate Student: Physics Major). Honors Thesis: "Photoinduced Release of Organic Dyes from Liposomes" (**Graduated Spring 1992**).
3. **Michael A. Holt** (Undergraduate Student: Physics Major). Supported Full Time During Summer 1992 by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". Research Project: "Controlled Release of Dyes from Liposomes" (**Graduated Spring 1996**).
4. **Kristi C. White** (Undergraduate Student: Chemical Eng. Major). Supported Half-Time During the Academic Year (1993-95) and Full Time During Summers by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". Research Project: "FTIR Studies of Precursors for Organic Radicals".
5. **Rafiu A. Abina** (Undergraduate Student: Mechanical Eng. Major). Supported Full Time Summers 94-96 and Half-Time During the Academic Year (1994-97) by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". Research Project: "FTIR Spectroscopy of Nitrogen Dioxide and Nitric Acid".
6. **Carron Sandifor** (Undergraduate Student: Computer Science Major). Supported Full Time During Summers 94-96 & Half-time During the Academic Year (1994-96) by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". Research Project: "Lifetime and Chemical Kinetics Studies Involving the Methoxy Radical". (**Graduated Spring 1998**).
7. **John Jordan** (Undergraduate Student: Electrical Engineering Major). Supported Full Time During Summer 96 & Half-Time During the Academic Year (1996-97) by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". Research Project: "FTIR Spectroscopy of Trace Atmospheric Molecular Species" (**Graduated Spring 1998**).
8. **Dr. Abdullahi H. Nur** (Graduate Student: Physics). M.S. Thesis : "LIF Spectroscopy of the Hydroxyl and Methoxy Radicals" (**Graduated Fall 91**). His **Ph.D. Dissertation** was on "Laser Optogalvanic Spectroscopy and Laser-Induced Chemical Kinetics Studies Pertaining to the Methoxy Radical" (**Graduated Fall 1994**). He was supported as a **Postdoctoral** Research Associate (Jan-Aug, 1995). He was employed as a **Faculty Member** in the Department of Mathematics, Physics & Computer Science at Virginia Union University, Richmond, VA.
9. **Hosie L. Bryant** (Graduate Student: Physics). Supported Full Time During the Calendar Years (1993-95). Research Project: "Spectroscopy of Jet-Cooled Chemical Intermediates of Importance to Atmospheric & Combustion Phenomena".
10. **Dr. Michael King** (Graduate Student: Physics). **Ph.D. Dissertation**: "Laser Spectroscopy and Chemical Kinetics Investigations of the Methoxy Radical" (**Graduated Fall 96**). He is employed as a Research Scientist with Microelectronics Research Laboratory, Columbia, MD.
11. **Mohammed M. Kamal** (Graduate Student: Physics). M.S. Thesis: "FT-IR Spectroscopy and High Resolution Laser Spectroscopy Associated with Alkoxy and Alkylthio Radicals" (**Graduated Fall 94**). He is employed as a Senior Programmer with SAIC, VA.

12. **Abdullahi Aw-Musse** (Graduate Student: Physics). M.S. Thesis: "Fourier Transform Infrared (FT-IR) Spectroscopy of Trace Gases HCl and NO of Relevance to Atmospheric Phenomena" (**Graduated Summer 1997**). He is employed as a Patent Examiner with the U.S. Patent and Trademark Office, Arlington, VA.
13. **Dr. Edward H. Dowdye, Jr.** (Graduate Student: Physics). **Ph.D. Dissertation:** "FT-IR Spectroscopic Assessment of Gas-Phase Absorption of Atmospheric Molecular Species at Low Concentrations and their Associated Adsorption Effects on Various Material Surfaces" (**Graduated Spring 2000**). He was employed (now retired) as a Civil Servant/ Research Scientist at NASA Goddard Space Flight Center, Greenbelt, MD.
14. **Dr. Helen Major** (Graduate Student: Physics). **Ph.D. Dissertation:** "Investigation of the Time-Resolved Laser Optogalvanic Waveforms of Argon and Neon and their Usefulness in the Analysis of Direct Current Plasmas" (**Graduated Summer 2000**). She was employed as an Associate Professor of Physics at Lincoln University, PA.
15. **Xinming Zhu** (Research Associate); Supported Full Time (1991-95) on Funded Research Projects: "Laser Spectroscopy of Combustion Intermediates in a Supersonic Jet Expansion" (Wright-Patterson Air Force Base, 1990-93); "Spectroscopic Investigations of Chemical Intermediates of Environmental Significance" (Environmental Protection Agency, 1993-96) and by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres". He is currently employed as an **Optical Engineer** with Continuum in Santa Clara, CA.
16. **Dr. Mark A. Dubinskiy** (Senior Research Scientist); Supported Full Time on Funded Research Project: "Free Radical Spectroscopy & Kinetics in Microgravity Combustion" (NASA Glenn Research Center, 1994-96). After working as a Senior Visiting Scientist at the USAF Wright Laboratory in the Electro-Optics Laser Applications Branch, Dayton, OH, he is currently employed as a Group Leader/Research Scientist with Army Research Laboratory, MD.
17. **Dr. Y.-B. (Bruce) She** (Senior Research Associate); Supported Full Time on Funded Research Project: "Free Radical Spectroscopy & Kinetics in Microgravity Combustion" (NASA Glenn Research Center, 1996-98).
18. **Dr. Chandran Haridas** (Postdoctoral Fellow); Supported Full Time on Funded Research Project: "Spectroscopic Investigations of Chemical Intermediates of Environmental Significance" (Environmental Protection Agency, 1996-97) & NASA Glenn grant (1997-98). He worked as a Lecturer III in the Department of Physics and Astronomy, Howard University, for the 1998-99 and 1999-2000 Academic Years. He is teaching high school physics in the West Virginia Public School System.
19. **Lawrence Wilson** (Undergraduate Student:) Supported Full Time by the NASA "Center for the Study of Terrestrial & Extraterrestrial Atmospheres" for the "FT-IR Spectroscopy of Trace Atmospheric Species" (1998-99). (**Graduated Fall 2000**).
20. **Jonah Flowers** (Undergraduate Summer Student) Supported by CHARC/CSTEA Program and worked on the "FT-IR Spectroscopy of Trace Amounts of Sulfur Dioxide" (1998).
21. **Kolin Newsome** (Undergraduate Summer Student) Supported by CHARC/CSTEA Program and worked on the "Accurate Concentration Estimates of Sulfur Dioxide Using FT-IR Spectroscopy and Exploratory LabVIEW Programming for Atmospheric Measurements" (1999).
22. **Girum Gugsu** (Research Associate, 1998-present) Supported by the Universities Space Research Association (USRA)-Earth System Science Education for the 21st Century (ESSE 21)-sponsored project "Development of an Earth & Space Science-Focused Education & Research Program at Howard University." Girum worked on uploading and updating the ESSE 21-related web site for the above-cited project. He was also involved in developing and upgrading the main web site for the Laser Spectroscopy Laboratory. After working at the NASA Goddard Space Flight Center, he is now employed with SAIC.
23. **LeVatrice Nora** (Graduate Student: Physics) Supported full-time by the *Center for the Study of Terrestrial & Extraterrestrial Atmospheres (CSTEA)* and performed M.S. research on Laser Optogalvanic Spectroscopy

of Neon & Argon Transitions and Optical Spectroscopy of Dental Enamel (**Graduated Spring 2004**). She is a teacher in the Prince Georges County Public Schools system, Maryland.

24. **Vasant Venu** (Undergraduate Student from University of Maryland Baltimore County) Supported on the NASA-USRA Earth & Space Science project (2005-06). He co-developed the website for the *Laser Spectroscopy Laboratory* (<http://www.physics1.howard.edu/~pmisra/Research.html>).

25. **Obafemi Otelaja** (Undergraduate EE Student) Supported on the Howard University Student Employment Program (2006-07). He investigated optogalvanic transitions using an iron-neon hollow cathode lamp and a Nd:YAG-pumped tunable dye laser.

26. **Cyril Acholo** (Undergraduate Computer Engineering Student) Research Volunteer who worked on applying laser spectroscopy to atomic and molecular transitions using the Nd:YAG-pumped tunable dye laser system (2006-07).

27. **Cristin Chall** (Undergraduate Physics Major) Supported on the NASA-USRA Earth & Space Science Project (2005-06). His research project focused on applying LabVIEW to spectral data acquisition in the *Laser Spectroscopy Laboratory*.

28. **Dr. Angelina Amadou** (Graduate Student: Physics) Supported on a Graduate Teaching Assistantship by the Department of Physics & Astronomy/Graduate School of Arts & Sciences. **Ph.D. Dissertation** (Co-Advisor: Dr. V. Morris/Chemistry): "Microphysical & Optical Properties of Organic Aerosols & Their Relevance to Cloud Condensation Nuclei" (**Graduated Spring 2006**). She served as a **Postdoctoral Fellow** in the *Laser Spectroscopy Laboratory* & as a Lecturer in the Department of Physics & Astronomy (2006-08 & 2014-15).

29. **Dr. Johnny Batts** (Graduate Student: Physics) Supported full-time by the *Center for the Study of Terrestrial & Extraterrestrial Atmospheres (CSTEA)*. **Ph.D. Dissertation** (Co-Advisor with Dr. J. Halpern/Chemistry) "Spectroscopic Measurements of the Concentration of Atmospheric Formaldehyde (CH₂O) in Beltsville, Maryland" (**Graduated Summer 2006**).

30. **Dr. Ogungbemi Kayode** (Graduate Student: Physics) Supported on a Graduate Teaching Assistantship by the Department of Physics & Astronomy/Graduate School of Arts & Sciences and as a Graduate Research Assistant on a Missile Defense Agency (MDA) funded grant. He pursued a **Ph.D. Dissertation** "Laser Optogalvanic Spectroscopy of Discharge Plasmas and Modeling & Analysis of Rocket Plume RF-Line Emissions" (**Graduated Spring 2010**). He continued as a **Postdoctoral Research Associate** on the MDA-funded project (2010) and then as a Lecturer in the Department of Physics & Astronomy (2010-11).

31. **Dr. Tania De** (Graduate Student: Physics) Supported on a Graduate Teaching Assistantship by the Department of Physics & Astronomy/Graduate School of Arts & Sciences. M.S. Thesis: "Spectroscopy of Normal & Diseased Teeth" (**Received M.S. in Spring 2006**). Tania continued with her **Ph.D. Dissertation**: "Retrospective Radiation Dosimetry Study of Human Teeth, Bone and Finger Nail Using Electron Paramagnetic Resonance" (**Graduated Spring 2011**). She is currently an Associate Professor in Montgomery College, MD.

32. **Dr. Tariq Ahmido** (Graduate Student: Physics) Supported on an ONR/HBEC Fellowship (2006-08) & Naval Research Laboratory (2008-11). **Ph.D. Dissertation** (in collaboration with Dr. A. Ting of NRL) "Remote Sensing of Explosive Surrogates Using Ultrashort Laser Induced Breakdown Spectroscopy" (**Graduated Spring 2011**). He is currently a postdoctoral fellow at Johns Applied Physics Laboratory, Laurel, MD.

33. **Ryan O'Donnell** (Undergraduate Physics Major) Worked on the Microgravity Project "Low Gravity Gas-Liquid Contactor," funded by the NASA Reduced Gravity Program, 2013.

34. **Dr. Daniel Casimir** (Graduate Student: Physics) Supported on NSF AGEP & Sloan Fellowships. **Ph.D. Dissertation**: "Investigation of Thermal Expansion Properties of Single Walled Carbon Nanotubes by Raman Spectroscopy and Molecular Dynamics Simulation" (**Graduated Spring 2015**). He is currently a Lecturer in the Department of Physics & Astronomy at Howard University.

35. **Dr. Raul Garcia-Sanchez** (Graduate Student: Physics) Supported on an NSF AGEP Fellowship. He has worked on the "Development of the Organic Contaminants Spectral Database for the ongoing (2012-present)

NASA Mars Science Laboratory (MSL) Mission”. **Ph.D. Dissertation:** “Characterization of Metal Oxide Gas Sensors Using Raman Spectroscopy and Computer Simulations” (**Graduated Spring 2016**). He is currently a Lecturer in the Department of Physics & Astronomy at Howard University.

36. **Kenisha Ford** (Graduate Student: Physics) Supported by a Graduate Teaching Assistantship. Her research involves “LAMMPS- Driven Molecular Dynamics Simulation Studies of Single Walled Carbon Nanotubes at Different Temperatures” (2012-13).

37. **Janelle Holmes** (Undergraduate Physics Major) Involved in research focused on the “Antistokes Raman Spectroscopy of Single Walled Carbon Nanotubes” (2012-13) and “Solar Storms and Lunar South Pole Space Weather” (with Mentor: W. Farrell/GSFC, 2014-present). Supported on NSF HBCU-UP and DREAM 2 grants. **Graduated Spring 2016**. Currently pursuing a Ph.D. in Applied Physics at the University of Michigan.

38. **Naomi Haddock** (Undergraduate Physics Major) Worked on PASCO physics software package to understand how gravity and friction affect the dynamics of motion and collisions between bodies on impact with the ultimate aim of understanding the effects of microgravity (2014-15). Supported on NSF HBCU-UP grant. **Graduated Spring 2018**.

39. **Kyia Rutherford** (Undergraduate Physics Major) Engaged in bringing up to speed a Fourier Transform Infrared (FTIR) spectrometer to characterize nanomaterials in the mid-infrared to complement the Raman spectroscopy measurements (2014-15). Supported on NSF HBCU-UP grant. **Expected Graduation Spring 2020**.

40. **Keenan Hunt-Stone** (Undergraduate Physics Major) Involved in NASA DREAM2 Project (with Mentor: Timothy Stubbs/GSFC) “Using Apollo Data to Characterize the Lunar Environment” (2015-16) and works on a Targeted Infusion Project to Develop a Hybrid General Astronomy Course (with Instructor: D. Venable) Using the Howard University Planetarium & Observatory (2012-16). Supported on NSF HBCU-UP & DREAM 2 grants. **Graduated Spring 2017**. Currently pursuing a Ph.D. in Applied Physics at the University of Michigan.

41. **Iman Ahmed** (Undergraduate Physics Major) Performing Scanning Electron Microscope (SEM) & Raman Spectroscopy measurements on graphene nanoplatelets (2016-19). Supported on NSF HBCU-UP and DREAM 2 grants. Her honors thesis was titled “Characterization of Functionalized Graphene Nanoplatelets Using Scanning Electron Microscopy and Raman Spectroscopy.” **Graduated Spring 2019**.

42. **Ajani Smith-Washington** (Undergraduate Physics Major) Engaged in Raman Spectroscopy and Machine Learning Characterization of Functionalized Graphene Nanoplatelets (2017-present), and also “Remote Sensing Observations of the Lunar Sodium Corona” (2019-present; with mentor R. Killen at NASA Goddard). Supported on NASA DREAM 2 and LEADER projects.

43. **Robert Coleman** (Undergraduate Computer Engineering Major) Engaged in Raman and Infrared Spectroscopy and Machine Learning Algorithms Associated with Large Spectral Datasets Associated with Lunar Analog Minerals (2019-present; Supported on Indirect Cost Funds, previously on NASA DREAM2 project).

44. **Hawazin Alghamdi** (Graduate Student: Physics) Supported on Graduate Teaching Assistantship. **Ph.D. Dissertation:** “Spectroscopic Characterization and Molecular Dynamics Simulation of Tin Dioxide, “ (2018-present; Expected Graduation (2021).

45. **Olasunbo Farinre** (Graduate Student: Physics) Supported on Graduate Teaching Assistantship. **Ph.D. Dissertation:** “Spectroscopic Characterization and Molecular Dynamics Simulation of Carbon Nanotubes and Functionalized Graphene Nanoplatelets,” (2018-present; Expected Graduation (2021).

COMPLETE LIST OF RESEARCH PRESENTATIONS & PUBLICATIONS OF P. MISRA

1. "Analysis of the v_1+v_2 and $v_1+v_2-v_2$ Bands of $^{14}\text{NH}_3$ and $^{15}\text{NH}_3$ ", S. Urban, **P. Misra**, R. D'Cunha and K.N. Rao, Paper RE13, 39th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1984.
2. "Performance of a 300 grooves/mm, 20 cm x 40 cm Bausch & Lomb Plane Grating in a 10-M Czerny-Turner System Operating in the UV Region", C.W. Mathews, B. Hare, **P. Misra**, M. St. Clair, E. Williams, Jr. and K.N. Rao, Paper RC10, 39th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1984.
3. "Vibration-Rotation Bands of Ammonia", **P. Misra**, Department of Physics, The Ohio State University, Columbus, OH, May 1985.
4. "The B $^2\Sigma^+-X^2\Sigma^+$ System of $^{12}\text{C}^{16}\text{O}^+$ and $^{13}\text{C}^{16}\text{O}^+$ ", **P. Misra**, C.W. Mathews, D.W. Ferguson and K.N. Rao, Paper MF11, 41st International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1986.
5. "Laser Induced Fluorescence Spectrum of Cold Methoxy Radical", S.C. Foster, X. Liu, **Prabhakar Misra**, L. Yu, C.P. Damo and T.A. Miller, Paper RA1, 42nd International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1987.
6. "Laser Spectroscopy of Free Radicals in a Supersonic Jet", **P. Misra**, Department of Physics & Astronomy, Howard University, Washington, DC, May 1988.
7. "Laser Excitation and Dispersed Fluorescence Spectra of Methoxy Produced by Photodissociation in a Pulsed Supersonic Jet Expansion", S.C. Foster, **Prabhakar Misra**, T.-Y. Lin, C.P. Damo, C.C. Carter and T.A. Miller, 43rd International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1988.
8. "Rotational Analysis of the A $^2A - X^2E$ Transition of CH_3O and CH_3S ", X. Liu, **Prabhakar Misra**, S.C. Foster, C.P. Damo, T.-Y. Lin and T.A. Miller, Paper TG13, 43rd International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1988.
9. "Excitation and Dispersed Fluorescence Spectra of the Ethoxy Free Radical", S.C. Foster, **Prabhakar Misra**, T.-Y. Lin, C.P. Damo, C.C. Carter and T.A. Miller, Paper MG3, 43rd International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1988.
10. "Laser-Induced Fluorescence Spectroscopy in a Free Jet", Department of Physics, James Madison University, Harrisonburg, VA, June 1988, Invited Talk.
11. "Free-Jet Cooled Laser Spectroscopy of Transient Molecules", Department of Physics, Howard University, Washington, DC, October 1988, Invited Talk.
12. "Laser Spectroscopy: A Probe Into the Private World of Atoms & Molecules", Society of Physics Students, Howard University Chapter, American Physical Society (APS), April 1990, Invited Talk.
13. "Fluorescent Decay and Radiative Lifetimes of the A $^1\Sigma^-$ State of C_2N_2 ", S. Barts, K. Pinnex, Y. Huang, **P. Misra** and J. Halpern, Paper RD10, 45th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1990.
14. "Release of Liposome Contents by Pulsed Laser Excitation", D.L. VanderMeulen, M. Khoka, **P. Misra**, J. Michael and K.G. Spears, Paper B1, Amoco/University Poster Session, Amoco Research Center, Naperville, IL, October 1990.
15. "Laser-Induced Release from Dye-Encapsulated Liposomes", **P. Misra**, J. Michael, D.L. VanderMeulen, K.G. Spears and M. Khoka, Paper 55, Graduate Research Symposium, Howard University, Washington, DC, April 1991.
16. "Pulsed Laser Excitation of Liposomes Containing Organic Dyes", **P. Misra**, J. Michael, D.L. VanderMeulen, K.G. Spears and M. Khoka, Paper F11 1, Annual Meeting Abstracts of the American Physical Society, Washington, D.C., April 1991.

17. "Photoinduced Release of Dyes from Liposomes", LaTonya J. Pegues and **Prabhakar Misra**, Sixth Annual National Conference of Black Physics Students, Stanford University, CA, February 1992.
18. "Laser Spectroscopy of the Hydroxyl and Alkoxy Radicals in a Supersonic Jet", **P. Misra**, X. Zhu, and A.H. Nur, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Washington, D.C., April 1992, *Bull. Am. Phys. Soc.* **37 (2)**, B10 5, 890 (1992).
19. "Laser Excitation Spectroscopy of Jet-Cooled Hydroxyl and Methoxy Radicals in the Overlapping 308-317 nm Spectral Region", Abdullahi H. Nur, Xinming Zhu, and **Prabhakar Misra**, Paper I-26, XXth Informal Conference on Photochemistry, Georgia Institute of Technology, GA, May-June 1992.
20. "Laser Excitation and Time-Resolved Fluorescence Measurements Involving Liposomes", Fazla R.B. Hossain and **Prabhakar Misra**, Seventh Annual National Conference of Black Physics Students, Michigan State University, East Lansing, MI, February 1993.
21. "Supersonic Jets and Excimer Lasers: A Stable Marriage for the Study of Unstable Free Radicals", **Prabhakar Misra**, Colloquium, Department of Physics & Astronomy, Howard University, Washington, D.C., February 1993.
22. "Laser Jet Spectroscopy of Methoxy and Methylthio Radicals", Hosie L. Bryant and **Prabhakar Misra**, Paper 81, Graduate Research Symposium, Howard University, Washington, D.C., April 1993.
23. "High Resolution Laser Induced Fluorescence Spectroscopy of the CH₃O and CH₃S Radicals", Mohammed M. Kamal and **Prabhakar Misra**, Paper 80, Graduate Research Symposium, Howard University, Washington, D.C., April 1993.
24. "Controlled Release of Dye from Liposomes", Michael A. Holt and **Prabhakar Misra**, Paper 82, Graduate Research Symposium, Howard University, Washington, D.C., April 1993.
25. "Time-Resolved Fluorescence Spectra of Dye-Liposome Complexes", Fazla Rabbi B. Hossain and **Prabhakar Misra**, Paper 79, Graduate Research Symposium, Howard University, Washington, D.C., April 1993.
26. "Vibronic and Rotational Analyses of LIF Spectra of CH₃O and CH₃S Radicals", **P. Misra**, X. Zhu, H. Bryant, A. Nur, and M. Kamal, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Washington, D.C., April 1993, *Bull. Am. Phys. Soc.* **38 (2)**, E11 7, 970 (1993).
27. "Multiphoton Cycling in Controlled Laser-Induced Release of Organic Dyes from Liposomes", **P. Misra**, S. Misra, D.L. VanderMeulen, and K.G. Spears, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Washington, D.C., April 1993, *Bull. Am. Phys. Soc.* **38 (2)**, E11 10, 971 (1993).
28. "Laser-Induced Fluorescence Spectroscopy of Jet-Cooled Free Radicals", **Prabhakar Misra**, Invited Talk at LASERS '93 International Conference, Paper TG2, Lake Tahoe, NV, December 1993.
29. "Laser Spectroscopy of Alkoxy and Alkylthio Radicals", Mohammed M. Kamal, Xinming Zhu, and **Prabhakar Misra**, Graduate Research Symposium, Paper 93, Howard University, Washington, D.C., April 1994.
30. "Laser Optogalvanic Spectroscopy", Abdullahi H. Nur, Xinming Zhu, and **Prabhakar Misra**, Graduate Research Symposium, Paper 92, Howard University, Washington, D.C., April 1994.
31. "Lasers and Liposomes: A Successful Marriage for Dye Release and Drug Delivery", Michael A. Holt and **Prabhakar Misra**, Graduate Research Symposium, Paper 94, Howard University, Washington, D.C., April 1994.
32. "Molecular Spectroscopy of Supersonically Cooled Transient Species", **P. Misra**, X. Zhu, M.M. Kamal, and A.H. Nur, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Crystal City, VA, April 1994, *Bull. Am. Phys. Soc.* **39 (2)**, G7 14, 1119 (1994).

33. "The Nature and Utility of Laser Optogalvanic Transitions in Spectroscopy", **P. Misra**, X. Zhu, and A.H. Nur, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Crystal Society, VA, April 1994, Bull.Am.Phys.Soc. **39 (2)**, G7 13, 1119 (1994).
34. "Laser Optogalvanic Transitions of Neon in The Near Ultraviolet and Visible", **P. Misra**, X. Zhu, and A.H. Nur, Paper TA09, 49th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1994.
35. "Vibrational and Rotational Laser Spectroscopy of Supersonically Cooled Alkoxy and Alkylthio radicals", **P. Misra**, X. Zhu, M.M. Kamal, A.H. Nur, and H.L. Bryant, Jr., Paper MG04, 49th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1994.
36. "Laser Excited Fluorescence From Organic Dyes Released from Liposomes", **P. Misra**, D.L. VanderMeulen, and K.G. Spears, Paper MF10, 49th International Molecular Spectroscopy Symposium Abstracts, Columbus, OH, June 1994.
37. "Design and Development of an All-Solid-State Laser Unit for Microgravity Combustion Applications", Mohammed M. Kamal, Mark A. Dubinskiy, and **Prabhakar Misra**, NASA Lewis Research Center HBCU Conference Abstracts, Cleveland, OH, March 1995, p. 18.
38. "Rovibronic Spectroscopy of the Ethoxy Radical in a Supersonic Jet Environment", **Prabhakar Misra**, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Washington, DC, April 1995. Bull. Am. Phys. Soc. **40 (2)**, I11 1, 998 (1995).
39. "Time-Resolved Emission Spectroscopy of the Alkoxy Radicals", **Prabhakar Misra**, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Washington, DC, April 1995. Bull. Am. Phys. Soc. **40 (2)**, I11 15, 1000 (1995).
40. "Determination of Several New Vibrational Frequencies for the Ethoxy Radical", **P. Misra**, X. Zhu, and M.M. Kamal, Paper TJ10, 50th International Molecular Spectroscopy Symposium Abstracts, Columbus, Ohio, June 1995, p. 215.
41. "Fluorescence Lifetimes of Laser-Excited Alkoxy Radicals", **P. Misra**, C. Sandifor, and X. Zhu, Paper TJ11, 50th International Molecular Spectroscopy Symposium Abstracts, Columbus, Ohio, June 1995, p. 216.
42. "Chemical Kinetics of the Reaction of Methoxy with Molecular Oxygen for Various Temperatures, Pressures and Buffer Gases", **P. Misra**, A.H. Nur, and X. Zhu, Paper TJ04, 50th International Molecular Spectroscopy Symposium Abstracts, Columbus, Ohio, June 1995, p. 212.
43. "Measurement of the Rate Constant of the Reaction of Methoxy (CH_3O) with Nitrogen Dioxide (NO_2)," Michael King and **Prabhakar Misra**, American Physical Society March Meeting, St. Louis, MO, March 18-22, 1996.
44. "Experimental Error in the Measurement of the Rate Constant of the Reaction of Methoxy (CH_3O) with Nitrogen dioxide (NO_2)," Michael King and **Prabhakar Misra**, American Physical Society March Meeting, St. Louis, March 18-22, 1996.
45. "FTIR Spectroscopy of HNO_3 and NO_2 Relevant to Stratospheric Wake Analysis," R.A. Abina, **P. Misra** and H. Okabe, First National Student Conference, The National Alliance of NASA University Research Centers at Minority Institutions, North Carolina A&T State University, March 31-April 2, 1996.
46. "Free Radical Spectroscopy and Kinetics in Microgravity Combustion," **Prabhakar Misra**, Third Research Conference Sponsored by NASA Lewis Research Center and The Ohio Aerospace Institute, Cleveland, Ohio, April 10-11, 1996.
47. "Flame Characterization Using a Tunable Solid-State Laser with Direct UV Pumping," Mohammed M. Kamal, Mark A. Dubinskii and **Prabhakar Misra**, Third Research Conference Sponsored by NASA Lewis Research Center and The Ohio Aerospace Institute, Cleveland, Ohio, April 10-11, 1996.

48. "Development of An Analytical Unit for Flame Characterization in a Microgravity Environment Using a Tunable Solid-State Laser with Direct UV Pumping," M.A. Dubinskii, **P. Misra**, R.Yu. Abdulsabirov, S.L. Korableva, A.K. Naumov and V.V. Semashko, Conference on Lasers and Electro-Optics (CLEO96), Optical Society of America, Anaheim, CA, June 2-7, 1996.
49. "Analytical Unit for Laser-Induced Fluorescence Flame Characterization Using the LiCaAlF₆:Ce³⁺ Tunable UV Laser", M.A. Dubinskii, **P. Misra**, R.Yu. Abdulsabirov, S.L. Korableva, A.K. Naumov and V.V. Semashko, European Conference on Lasers and Electro-Optics/European Quantum Electronics Conference (CLEO/EUROPE-EQEC '96), Hamburg, Germany, September 8-13, 1996.
50. "Fourier Transform Infrared Spectroscopy of Alkyl Nitrites", **P. Misra**, M.M. Kamal, M. King, E. Dowdye, H. Major and H. Lauziere, Paper TK.1, International Conference on LASERS '96, Portland, Oregon, December 2-6, 1996.
51. "Laser-Initiated Chemical Kinetics Investigations Involving the Alkoxy Radicals", **P. Misra**, M. King, X. Zhu, C. Sandifor and A. Nur, Paper TD.2, International Conference on LASERS '96, Portland, Oregon, December 2-6, 1996.
52. "Laser Spectroscopy of Supersonically-Cooled Alkoxy Radicals", **P. Misra**, Paper TD.3, International Conference on LASERS '96, Portland, Oregon, December 2-6, 1996.
53. "Solid State Laser Platforms for Elucidation of Microgravity Combustion Phenomena", **P. Misra**, Y.B. She and M.A. Dubinskii, Paper TD.4, International Conference on LASERS '96, Portland, Oregon, December 2-6, 1996.
54. "Laser Excited Optogalvanic Transitions in Microgravity Combustion and Free Radical Spectroscopy", **P. Misra** and Y.B. She, Paper TD.5, International Conference on LASERS '96, Portland, Oregon, December 2-6, 1996.
55. "Laser Spectroscopy and Chemical Kinetics Investigations of Transient Molecules of Relevance to Microgravity Combustion", **P. Misra**, Y.-B. She, M. Kamal and M. King, Paper P18, HBCU Research Conference, Ohio Aerospace Institute, Cleveland, Ohio, April 9-10, 1997.
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