Curriculum Vitae

Neal F. Lane

Malcolm Gillis University Professor
Senior Fellow, James A. Baker III Institute for Public Policy
Department of Physics and Astronomy
Rice University
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Date and Place of Birth:

August 22, 1938
Oklahoma City, OK

Education:

B.S.	University of Oklahoma	1960
M.S.	University of Oklahoma	1962
PhD.	University of Oklahoma	1964

Fellowships:

1964-1965, National Science Foundation (NSF) Postdoctoral Fellow, Queens University, Belfast, Northern Ireland
1965-1966, Visiting Fellow, Joint Institute for Laboratory Astrophysics (JILA), Boulder, CO
1967-1971, Alfred P. Sloan Foundation Fellow (Oxford University, Oxford, England, 1971)
1975-1976, JILA (University of Colorado at Boulder) Visiting Fellow
1984-1993, JILA Non-Resident Fellow (resigned appointment when appointed Director, NSF)
2002-present, JILA Adjunct Fellow

Professional Appointments:

1966-1969, Assistant Professor of Physics Rice University, Houston, TX
1969-1972, Associate Professor of Physics and Space Physics and Astronomy, Rice University
1972-1984, Professor of Physics and Space Physics and Astronomy, Rice University (chairman, 1977-1982)
1979-1980, Director of the NSF Division of Physics (on leave, Rice University)
1984-1986, Chancellor, University of Colorado, Colorado Springs (July 1984 to January 1986)
1984-2001, Professor of Physics, Rice University (on leave 1984-86 and 1993-2001)
1986-1993, Provost, Rice University

1993-1998, Director of the NSF and member (ex officio) of the National Science Board
1998-2001, Assistant to the President of the United States for Science and Technology and Director of the White House Office of Science and Technology Policy (OSTP)
2001–present, University Professor (currently, Malcolm Gillis University Professor; formerly Edward A. and Hermena Hancock Kelly University Professor), Rice University with appointments in the Department of Physics and Astronomy and the James A. Baker III Institute for Public Policy (as Senior Fellow)
2003–present, Adjunct Professor, University of Texas Health Science Center at Houston

Teaching Honors (Rice University):

1972-1973	Brown College Teach Award
1973-1974,	George R. Brown Prize for Superior Teaching
1976-1977,	George R. Brown Prize for Superior Teaching

Honorary Degrees:

Hon. DSc.	University of Alabama, 1994
Hon. DHL	University of Oklahoma, 1995
Hon. DSc.	Michigan State University, 1995
Hon. DHL	Marymount University, Virginia, 1995
Hon. DSc.	Ohio State University, 1996
Hon. DSc.	Washington College, Chestertown, Md., 1998
Hon. DSc.	University of Colorado, 1999
Hon. DSc.	Mount Sinai School of Medicine, 1999
Hon. DSc and HL	Illinois Institute of Technology, 2000
Hon. DSc.	Queen's University, Belfast, Northern Ireland, 2000
Hon. DSc.	North Carolina State University, 2001
Hon. DSc.	State University of New York, 2002
Hon. DSc.	University of Tulsa, 2006

Awards:

Distinguished Service Award, National Association of Biology Teachers, 1997
President's Award, American Society of Mechanical Engineers International, 1999
Public Service Award, American Chemical Society, 1999
Support of Science Award, Council of Science Societies Presidents, 2000
Philip Hauge Abelson Award, American Association for the Advancement of Science, 2000
William D. Carey Award, American Association for the Advancement of Science, 2001
Public Service Award, American Mathematical Society, American Astronomical Society, and American Physical Society, 2001
Distinguished Alumni Award, University of Oklahoma, 2002

Honorary Organizations:

Member, Sigma Pi Sigma (Physics, elected 1960)
Member, Sigma Xi: National Research Society (elected 1964, president, Rice-Texas Medical Center Chapter, 1978-1979; national president, 1993; national president-elect, 1992)

Member Phi Beta Kappa (elected 1960)
Member, Catholic Commission on Intellectual and Culture Affairs
Fellow, American Academy of Arts and Sciences (elected 1995)
Member, Cosmos Club (Washington D.C.)
Member, World Innovation Forum

Professional Societies:

Fellow, American Physical Society (APS)
Fellow, American Association for the Advancement of Science (AAAS)
Fellow, Association for Women in Science (AWIS) (elected 1997)
Member, American Association of Physics Teachers (AAPT)
Member, American Chemical Society

Professional Activities Prior to Appointment as Director, NSF:

At various times, General Committee for the International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC); Program Committee for the Conference on the Physics of Highly Charged Ions; Program and Fellowship Committees for the APS; Heineman Prize Committee (APS); National Research Council/National Academy of Science (NRC/NAS) Committee on Atomic and Molecular Sciences; Program Committee for the International Conference on Atomic Physics; NSF Physics Advisory Committee; NSF Subcommittee for the review of NSF-Supported Nuclear Physics Laboratories and Nuclear Science Programs
Chairman, APS Division of Electron and Atomic Physics (1977-78), Vice Chairman (1976-77)
President, Rice-Texas Medical Center Chapter, Sigma Xi, 1978-79
Chairman, NRC/NAS Evaluation Panel for JILA (1980-83); member (1980-84)
Chairman, Nominating Committee, APS Division of Electron and Atomic Physics, (1981)
Councilor at Large, APS (1981-84)
Member, Executive Committee, APS (1981-83)
Member, Finance Committee, APS (1981-82)
Member, Panel on Faculty Positions for Women Physicists, APS (1981-82)
Chairman, Panel on Public Affairs, APS (1983), Vice Chairman (1982)
Member, Committee on Constitution and Bylaws, APS (1981-83)
Vice Chairman, Executive Committee of the APS International Physics Group (1983-84)
Chairman, NSF Advisory Panel on Advanced Scientific Computing (1984-86)
Member, Governing Board, American Institute of Physics (AIP) (1983-86), Nominating Committee (1986)
Member, Sub-panel on Atomic, Molecular and Optical Physics of the NAS "Survey of Physics" (1983-84)
Member, Magnet Selection Panel, Superconducting Super Collider (SSC) project, Central Design Group, Lawrence Berkeley Lab (1985)
Member, SSC Board of Overseers, Universities Research Association (1987-93); Executive Committee (1990-93); Chairman, Administrative Affairs Committee (1991-93)
Chairman, Panel on Science and Engineering Manpower, Office of Technology Assessment, U.S. Congress (1986-88)

Member, Texas Scientific Advisory Committee (1988-90)
Chairman, NRC Evaluation Panel for the Center for Basic Standards of the National Bureau of Standards (1986-88) and Center for Atomic, Molecular, and Optical Physics of the National Institute of Standards and Technology (1988-90)
Member, Advisory Board for the Institute for Theoretical Atomic and Molecular Physics at the Harvard-Smithsonian Center for Astrophysics (1988-90) and (1991-92)
Member, Commission on Physical Sciences, Mathematics, and Applications, NAS/NRC (1989-93)
Member, Advisory Committee on "American Center of Physics" (APS, AIP, and AAPT) (1990-91)
Chairman, Panel on Future Opportunities in Atomic, Molecular, and Optical Sciences, NAS/NRC (1991-93)
Member, Texas National Research Laboratory Commission, Science Education Advisory committee (1991)
Member, Compton Medal Committee, AIP (1992)
Member, NSF Mathematical and Physical Sciences Directorate Advisory Committee (1992-93, resigned during term to accept NSF directorship)
Member, NSF Blue Ribbon Panel on High-Performance Computing (1993, resigned during term to accept NSF directorship)

Activities Related to Government Service as Director, NSF
(these were ex-officio appointments, held at various times during tenure as Director)

Member, National Science Board (Chairman of Executive Committee)
Member, National Science & Technology Council (NSTC)
Co-chair, Science Committee of the NSTC (with Dr. Harold Varmus, Dr. Arthur Bienenstock)
Member, Information Infrastructure Task Force (IITF)
Member, NRC Government-University-Industry Research Roundtable (GUIRR)
Chair, Interagency Arctic Research Policy Commission
Member, Arctic Research Commission
Member, National Oceanographic Research Leadership Council
Member, Federal Government Liaison Council of the Industrial Research Institute (IRI) Federal Science and Technology Committee
Co-Vice-Chairman, Science and Technology Committee of the Gore-Chernomyrdin Commission
Member, President's Management Council

Activities Related to Government Service as Assistant to the President for Science and Technology and Director OSTP

Served on the President's National Science and Technology Council (NSTC), co-chair of the President's Committee of Advisers on Science and Technology (PCAST), and on a number of other Federal and International Committees.

Professional Activities Since Leaving Government Service (January 2001)
(does not include Rice University committees and other activities) :

Member, APS Physics Planning Committee (2001-2003)
Chairman, Los Alamos National Laboratory Theoretical Division Review Committee (2001–2006), chairman (2002-2003)

Member, Board of Trustees, Civilian Research and Development Foundation (CRDF) (2001–2005)
Member, Board of Trustees, University Corporation for Atmospheric Research (UCAR) (2001–present)
Member, Advisory Board, TechVision, Houston, TX (2001–present)
Member, Advisory Committee, Texas Center for High Temperature Superconductivity, University of Houston (2001–2003)
Member, Committee on International Security Studies (CISS), American Academy of Arts and Sciences (2001–present)
Member, Board of Trustees, "Reasoning Mind", Houston, TX (2001–present)
Member, Advisory Committee, "Science for Society Project - Basic Research in the Service of Public Objectives", Columbia University's Center for Science, Policy, and Outcomes (2001–2003)
Member, Review Committee, Japanese Society for the Promotion of Science, (2002)
Member, Board of Trustees, Houston Museum of Natural Science (2002–present)
Member, Review Commission, University of Texas, Dallas (2002)
Member, Science and Technology Advisory Group (STAG) Advisory Committee, Taipei, Taiwan, Republic of China (2002–present)
Chairman, Committee on the Transportation of Radioactive Waste, National Academies, National Research Council (2003-2005)
Chairman, Technical Advisory Board, Institute of Nanomaterials and Nanotechnology, Hong Kong University of Science and Technology (2004–2005)
Chairman, Fermi Accelerator Laboratory Director Search Committee (2004)
Member, Council of the American Academy of Arts and Sciences (2005-present); also member of the Executive Committee of the Council.
Co-Chairman (with Dr. Charles Vest, MIT) S&T Advisory Committee, American Academy of Arts and Sciences (2005-present)
Member, NAS/NRC Decadal Study on Earth Sciences and Space Applications (2005-2007)
Member, NAS/NRC Decadal Study on Elementary Particle Physics (2005-2006)
Consultant, NAS/NRC Decadal Study on Atomic, Molecular and Optical Science (2005-2006)
Member, NAS/NRC Policy and Government Affairs Committee (2005-present)
Chairman, Texas Task Force on Access to Health Care in Texas (2005-2006)
Member, University of Texas Harrington Fellowships Board (2005-present)
Member, University of Texas Research Advisory Committee (2005-present)
Member, Advisory Committee for Jet Propulsion Laboratory (2006-present)
Member, Advisory Board, magazine *Innovations* (2006-present)
Member, Advisory Committee, SciFi Channel *futures initiative* (2006-present)
Member, National Academies NRC Review Panel on Scientific Integrity (2006-present)
Member, Board of Trustees, China Foundation for the Promotion of Education and Culture (Republic of China, Taiwan) (2007-present)
Member, American Academy of Arts and Sciences Committee on Research Funding and Regulation (Chaired by Tom Cech) (2007-present)
Member, National Academies NRC Panel to Review the National Academies *Keck Futures Initiative* (Chaired by James Duderstadt) (2007-present)
Member, Advisory Board, Scientists and Engineers for America (2007-present)
Member, Federation of American Scientists Governing Board (2007-present)
Member, Advisory Committee on (proposed) Large Synoptic Survey Telescope (Chaired by Tony Tyson) (2007-present)

Member, Government Affairs Advisory Committee, International Society for Stem Cell Research (2007-present)
Member, AAAS Abelson Prize Selection Committee (2007-present)

Selected Invited Presentations Prior to Appointment as Director, NSF (does not include the many physics seminars and colloquia at universities around the country)**:**

APS Annual Meeting, Washington, DC, 1970
APS Division of Electron and Atomic Physics, Yale University, 1973
Gaseous Electronics Conference, Rolla, MO, 1975
George J. Schultz Memorial Symposium, Yale, University, 1977
Distinguished Visiting Scientist University of Kentucky, 1980
U.S.-Japan Seminar on Electron-Molecular Collisions and Photo-ionization Processes, California Institute of Technology, 1982
Distinguished Karcher Lecturer, University of Oklahoma, 1983
XIII International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC), Berlin, 1983
International Symposium on "Wavefunctions and Mechanisms from Electron Scattering Processes", Castle Gandolfo, Italy, 1983
Atomic Physics in High Temperature Plasmas, Asilomar, CA, 1985
Conference on Computers for the Liberal Arts, Reed College, Keynote Address, 1985
Oji International Seminar on Highly Excited States of Atoms and Molecules, Fuji-Yoshida, Japan 1986
Ninth Conference on the Application of Accelerators in Research and Industry, Denton, TX, 1986
International Symposium on Correlation and Polarization in Electronic and Atomic Collisions, The Queen's University of Belfast, 1987
Supercomputing '93: Conference on High-Performance Computing and Communications, Portland, OR, 1993

Presentations as Director NSF and Assistant to the President for Science and Technology and Director OSTP

Numerous presentations were given as Director NSF from October 1993 to August 1998 and as Assistant to the President for Science and Technology and Director OSTP from August 1998 to January 2001 (substantial assistance was received from NSF, OSTP, and other Federal agency staff in preparation of presentations).

Examples of Presentations Since Leaving Government Service (January 2001)
(does not include Rice University campus presentations):

URA (Universities Research Associates) Council of Presidents, Washington DC, 2001
AAAS Annual Meeting, San Francisco, CA, 2001
Ohio Statewide Trustees Meeting, Columbus, OH, 2001
Branscomb Lecture at Harvard University, Kennedy School, Boston, MA, 2001
2001 Innovation Summit, Council on Competitiveness, panelist, San Diego, CA, 2001
Indo-American Chamber of Commerce of Greater Houston, Houston, TX, 2001 *
Nanotechnology Conference at IBM Almaden, San Jose, CA, 2001
Former Presidential Science Advisors, the 25th Anniversary of OSTP Conference, MIT, Boston, MA, 2001

Carey Lecture, AAAS Meeting, Washington DC, 2001
Council of Scientific Society Presidents, Washington DC, 2001
XXII International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC), Keynote Address, Santa Fe, NM, 2001
Committee on International Security Studies, American Academy of Arts and Sciences , 2001
North Carolina State University, Durham, NC, Commencement Address, 2001
National Research Council/Climate Workshop, Opening Remarks, Boulder, CO, 2001
Bechtel Chief Engineers Conference, Keynote Address, Houston TX, 2001
Bremen University, Bremen, Germany, 2001
River Oaks Breakfast Club, Houston, 2001 *
APS/AAPT, Texas Section, Keynote Address, Texas Christian University, Ft. Worth, TX, 2001
Houston Museum of Natural Science ("Views of the Earth Symposium", Earth Science Week), Houston, 2001 *
ROMEO (Rice Old Men Eating Out) Club, Houston, 2001 *
Annual Meeting of the APS Laser Science Division and the Optical Society of America, Keynote Address, Long Beach, CA, 2001
5th Grade Advanced and Enrichment Science Class, Hose Elementary, Crawfordsville, IN, 2001 *
Innovation and Technology Commission (ITC), Keynote Address, Hong Kong, 2001
Asia Society, Hong Kong, 2001
Chinese Academy of Science, Beijing, China, 2001
Brentwater Men's Club, 2002 *
University of Tulsa, Public Lecture, Tulsa, OK, 2002
University of Oklahoma, Distinguished Alumni Lecture, Norman, OK, 2002
Air Force Reserve/Retired Officers, 2002*
University of California at Berkeley, Public Lecture, 2002
State University of New York, Albany, NY, Commencement Address, 2002
Japan Task Force, National Institute and Laboratory Directors, Tokyo, 2002
University of Texas' Dean's Scholars Lecture, Austin, 2002
Kansas State University, Distinguished Lecture and Physics Colloquium, Manhattan, KS, 2002
University of Michigan, Gerald Wiesner Lecture and Lecture in Science and Technology Policy Course, Ann Arbor, MI, 2002
Sigma Xi Forum, Introductory Remarks, Galveston, TX, 2002
Georgia State University, College of A&S Distinguished Speaker Series, Atlanta, GA, 2002
Science and Technology Advisory Group, Presentation, Taipei, Taiwan, 2002
APS Division of Atomic, Molecular and Optical Physics Conference, Invited Talk, Norfolk, VA, 2002
Texas Nanotechnology Initiative Conference, Keynote Address, Dallas, TX, 2003
Iowa State University, University Lecture, Ames, IA, 2003

(in addition, Lane has presented many invited lectures and congressional testimony in 2003 - 2005 not listed, including public lectures and departmental colloquia at: Cornell University, University of Chicago, Yale University (Bromley Memorial Symposium), University of Colorado Boulder, University of Colorado at Colorado Springs, University of Oklahoma, University of Houston, University of Texas Regents meeting, University of Texas Medical Branch, Galveston, University of South Carolina, National Academies "President's Circle", AAAS and APS annual

meetings, American Academy of Arts and Sciences, Aspen Institute and Center for Physics, Los Alamos National Laboratory, Sante Fe Institute.)

(* indicates "civic scientist" talk for the general public in the Houston area.)

Research Activities

Dr. Lane's current scholarly interests include: U.S. and international science and technology policy; science education in K-12 schools; public understanding of science and technology and the role of the "civic scientist"; energy, environmental and space policy; health and medical research (e.g. stem cells research) policy.

Dr. Lane's research has been in the area of theoretical atomic and molecular physics, with an emphasis on collision phenomena including: electron-molecule and atom-atom scattering, excited atoms in liquid helium, ion collisions in dense plasmas, state-changing and ionization in collisions of excited atoms (including Rydberg atoms) with atoms, molecules and ions; alignment and orientation effects in atomic collisions; and very low energy collisions. His research was supported in part by the U.S. Department of Energy, Division of Chemical Sciences and by the Robert A. Welch Foundation. Dr. Lane's appointment as Director of the NSF required termination of his research support. Throughout his career Dr. Lane has collaborated with researchers at Argonne,, Los Alamos, and Lawrence Livermore National Laboratories.

Publications

Publications include two physics textbooks, numerous research articles in professional journals and articles on policy. Sample publications are shown below.

The following policy publications are representative of Dr. Lane's current policy interests:

1) Neal Lane, "The Grand Challenges of Nanotechnology", J. Nanoparticle research vol 3: pp 95-103 (2001)

2) Neal Lane and Rosina Bierbaum, "Recent Advances in the Science of Climate Change", Natural Resources and Environment: ABA Section of Environment, Energy, and Resources, vol 15, No. 3, pp 147-151, Winter (2001)

3) Neal Lane, "International science policy and atomic collision science", in Photonic, Electronic and Atomic Collisions,, Proc. XXII International Conference on Photonic, Electronic and Atomic Collisions, July 18-24, 2001, Rinton Press, pp 1-12 (2002).

4) Neal F. Lane, Rosina M. Bierbaum, and Mark T. Anderson, "Science and Water Policy for the United States", in *Water: Science, policy, and Management: Water Resources Monograph 16*, American Geophysical Union Press, p 207 (2003).

5) Neal Lane, "Benjamin Franklin, Civic Scientist", in "Physics Today", vol. 56, no. 10, p 41 (October 2003)

6) George Abbey and Neal Lane, "United States Space Policy: Challenges and Opportunities," American Academy of Arts and Sciences, (occasional paper) 2005.

7) Neal Lane and Tom Kalil, "The National Nanotechnology Initiative: Present at the Creation", *Issues in Science and Technology* , XXI, Number 4 (Summer 2005), pp 49-54 (National Academies, Washington D.C.)

8) Richard Casten and Neal Lane, "Obituary: David Allan Bromley," *Physics Today*, September 2005 (American Institute of Physics)

9) Neal Lane, "Two Civic Scientists – Benjamin Bederson and the other Benjamin," in *Advances in Atomic, Moleccular, and Optical Physics*, ed. by H.H. Stroke, vol 51, pp 41-48 (2005).

10) Neal Lane, "Alarm Bells Should Help us Refocus", editorial in *Science*, vol 312 (30 June 2006), page 1847.

11) Steven C. Currall, Eden B. King, Neal Lane, Juan Madera and Stacey Turner, "What Drives Public Acceptance of Nanotechnology?" in *Nature Nanotechnology*, vol 1 December 2006, page 153-155.

12) Neal Lane, "Politics and Science: A Series of Lessons," (article based on lecture at The New School), in *Social Research* , vol 73, no. 3 fall 2006, page 861.

13) Neal Lane "U.S. Science and Technology and the Role of the Federal Government," (paper prepared for the U.S.-China Science and Technology Forum, held in Beijing, October 2006) (included with proceedings of the forum)

14) William B. Gail, Milly K. Macauley and Neal F. Lane, "In shadow of climate debate this country owes it to its future to set up a comprehensive file on data about Earth", op-ed in Viewpoints/Outlook section of the Houston Chronicle, June 23, 2007

15) Neal Lane and Thomas Kalil, "In the Beginning: The U.S. National Nanotechnology Initiative," in *Nanoethics: The Ethical and Social Implications of Nanotechnology*, ed. By Fritz Allhoff, Patrick Lin, James Moor, John Weckert, page 80 (John Wiley and Sons, 2007) (this is a reprint of the 2005 article in *Issues in Science and Technology* XXI, Number 4 (Summer 2005), pp49-54, National Academies, Washington DC)

16) Neal Lane, "Threats to the Future of Science and Technology," (article based on lecture at University of Colorado, in a series on "Presidential Science Advisors") (in press).

Note that the above-referenced publications1), 2), and 4) and Dr. Lane's publications while in the Federal government benefited substantially from the

input - ideas and words -- of staff in the White House Office of Science and Technology Policy and other Federal agencies.

The following two (of over 90) research publications, prior to Dr. Lane's move to government in 1993, illustrate his earlier research interests:

1) M. Kimura, N.F. Lane, A. Dalgarno, and R.G. Dixson, "Rate coefficients for momentum transfer, charge transfer, and radiative association processes in collisions of H+ with He below 10**5 K", Astrophys. J., vol 405, p 801 (1993).
2) B.C. Saha and N.F. Lane, "Alignment and geometrical effects on Stueckelberg structure in cross sections for inelastic collisions involving rydberg atoms", Phys. Rev. Lett. vol 72, p 3487 (1994)