National Aeronautics and Space Administration

NACA & NASA's

Hall of Honor

Induction Ceremony
July 14, 2022
H. J. E. Reid Auditorium
NASA's Langley Research Center

Langley Research Center NACA & NASA's

Hall of Honor

INTRODUCTION
Michelle Ferebee
Mistress of Ceremonies
Acting Director, Office of Strategic Analysis, Communications, and Business Development
NASA's Langley Research Center

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Joint Base Langley-Eustis Honor Guard

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April Phillips
News Chief
NASA's Langley Research Center

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Clayton Turner
Director, NASA's Langley Research Center

VIDEO MESSAGE
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U.S. Congressman from the 3rd District of Virginia

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Massachusetts Institute of Technology Museum

Presentation of Class of 2022 NACA and NASA Langley Hall of Honor Inductees

Clayton Turner
Director, NASA's Langley Research Center

Dan Palumbo
President, Langley Alumni Association

Bo Walkley
Hall of Honor Committee

Julie Williams-Byrd
Hall of Honor Committee
Center Chief Technologist, NASA's Langley Research Center

RECEPTION
Refreshments provided by the Langley Alumni Association

H. J. E. Reid Auditorium • NASA's Langley Research Center

Langley Research Center
NACA & NASA's Hall of Honor

Introduction

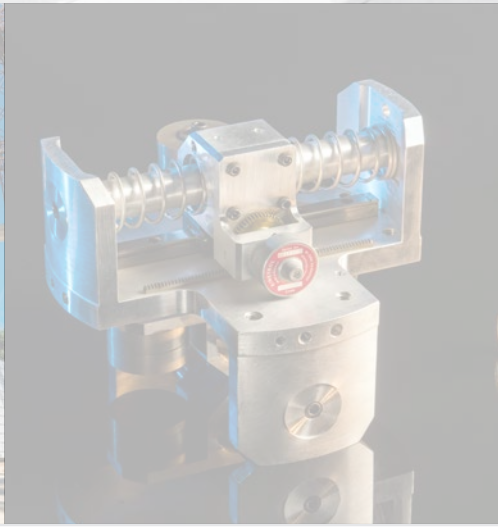
The Langley Research Center NACA and NASA's Hall of Honor was conceived by members of the Langley Alumni Association and the NASA's Langley Research Center to pay tribute to those individuals who built exemplary careers at Langley, persevered against the status quo when required, and achieved or supported achievement in revolutionary understanding and progress on the frontiers of aerospace and science.

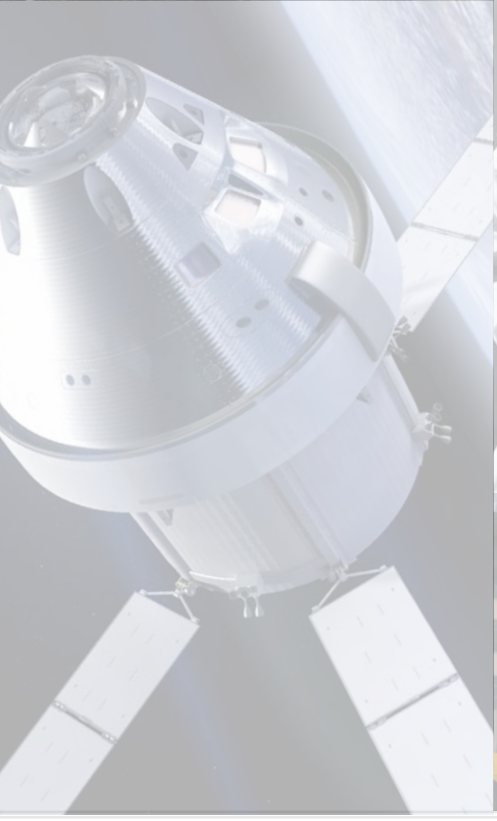
The Hall of Honor formally recognizes those persons whose contributions have had the most sustained and far-reaching influence on the leadership, direction, mission, and capabilities of the NACA Langley Memorial Aeronautical Laboratory and/or NASA's Langley Research Center, or whose work at NASA Langley enabled or supported unprecedented and fundamental advancements in either a technical and/or science field or mission support. These innovative accomplishments have made significant contributions to the United States' aerospace community for aircraft, spacecraft, or atmospheric sciences.

The Hall of Honor also provides an opportunity for NASA Langley employees to reflect on the contributions of these notable individuals – men and women, scientists and engineers, managers and support personnel – who made profound and enduring impacts on the work of our center and the technological leadership of our nation.

The Class of 2022 inductees into the Hall of Honor are representative of the diversity of talent required to enable an institution such as Langley to produce the extraordinarily valuable technical products that are its hallmark. They also highlight employee diversity which is such an important contributing factor to the innovation, dedication, and expertise that characterizes the Langley culture.


NASA



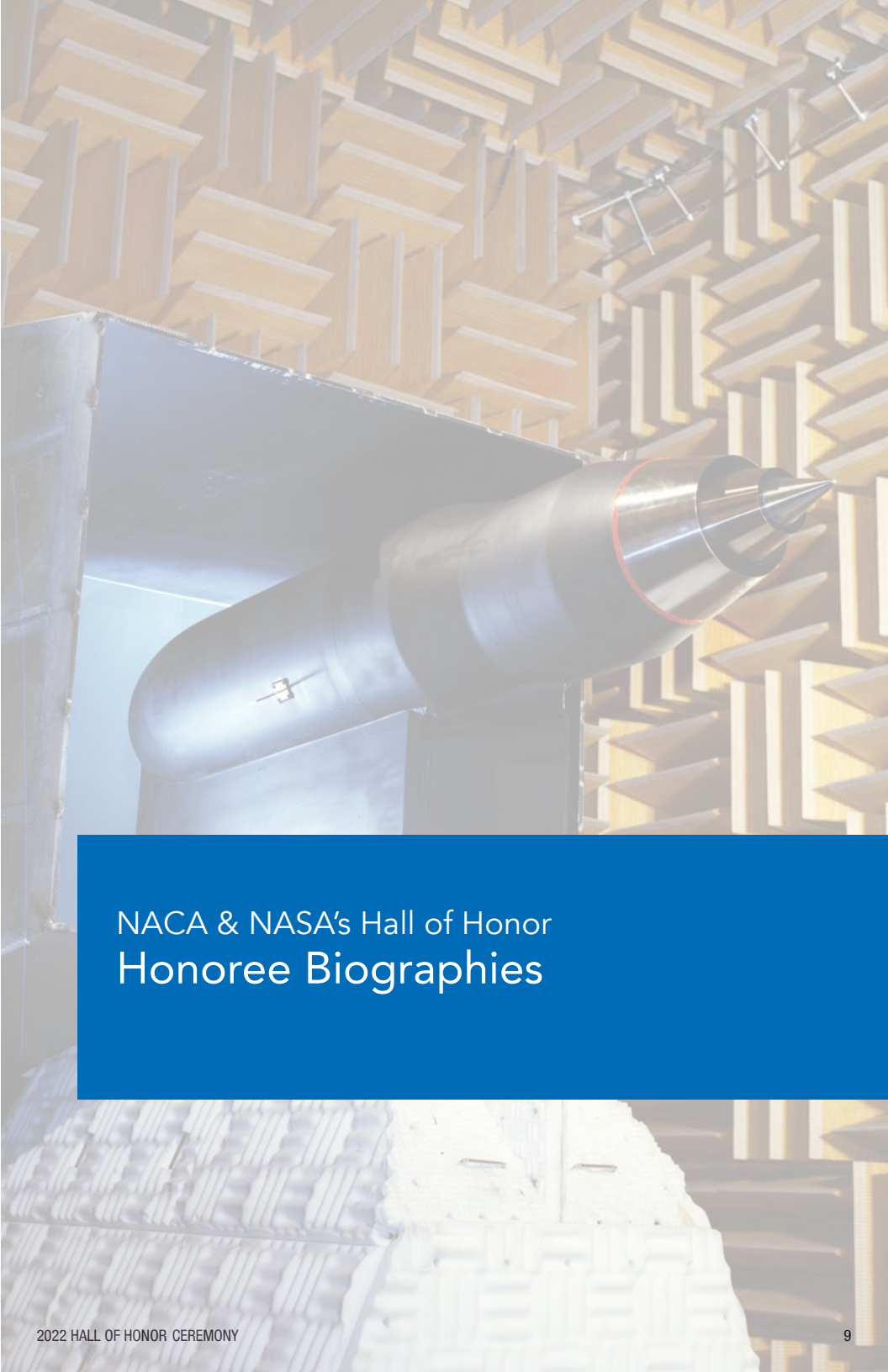



Research Center

Langley Research Center
NACA & NASA's Hall of Honor

Class of 2022

Christine M. Darden
Fereidoun Farassat
Peter A. Gnoffo
Charles E. Harris
Donald E. Hewes
Joseph S. Heyman
Paul F. Holloway
Ajay Kumar
James Donald Lawrence, Jr.
Domenic J. Maglieri
Samuel E. Massenberg, Sr.
Werner Pfenninger
James M. Russell III
Terry L. St. Clair
Darrel R. Tenney
Bruce A. Wielicki
A. Thomas Young



NACA & NASA's Hall of Honor

Honoree Biographies

2022 Honoree

Christine M. Darden

Dr. Christine Mann Darden (1942-) is internationally known for her research into supersonic aircraft noise, especially sonic boom reduction, and recognized for her groundbreaking achievement as the first African American woman at NASA Langley to be appointed to the top management rank of Senior Executive Service. She is equally known for her efforts to inspire and educate generations of aerospace scientists and engineers.

Born in Monroe, North Carolina, Darden graduated with a bachelor's degree in mathematics in 1962 from what is now Hampton University. She earned a teaching certificate and briefly taught high school math before she went on to Virginia State University, where she earned a master's in applied mathematics and also taught the subject there. Darden came to NASA Langley in 1967 as one of the last of the generation of "human computers." These were female mathematicians, many of them African Americans. She was one of the amazing Langley women featured in the book, "Hidden Figures."

After crunching numbers for six years, Darden was promoted to aerospace engineer, where her first assignment was to write a computer program for sonic boom - the sound associated with shock waves created by an aircraft flying faster than the speed of sound. That assignment led to a 30-year career in flight research, specializing in supersonic noise characterization, analysis and reduction. She also continued her education, receiving a doctorate in mechanical engineering from George Washington University in 1983.

By 1989 Darden was the sonic boom group technical lead for NASA's High Speed Research Program. She and the team worked on designs to decrease the environmental effects of supersonic aircraft, including noise and atmospheric pollution. Darden and the team also developed sonic boom prediction and other analysis codes used extensively by the aerospace industry in aircraft designs in the late 20th century.

In 1999 she became the director of NASA's Aero-Performing Center Management Office where she was responsible for Langley research in air traffic management and aeronautics programs managed at other NASA centers. Darden also worked with Langley's Strategic Planning Office and was the head of Langley's Strategic Communications Office at the time of her retirement in 2007.

Darden is the author of more than 50 publications in the field of high lift wing design in supersonic flow, flap design, sonic boom prediction and sonic boom minimization. She has been active in several organizations including as an associate fellow of the American Institute of Aeronautics and Astronautics (AIAA), secretary of the Aeroacoustics Technical Committee of the AIAA, Beta Kappa Chi National Scientific Honor Society, Kappa Mu Epsilon Honorary Mathematics Society, the National Technical Association, and the Sigma Pi Sigma Physics Society.

Among the awards Darden has received are the Lifetime Achievement Award from Women in Aerospace, the Black Engineer of the Year Award for Outstanding Achievement in

In recognition of exemplary technical contributions in supersonic aircraft noise research and trailblazing career achievement, from "human computer" to the first African American woman at NASA Langley to earn the top federal management rank of Senior Executive Service.

Government, the NASA Outstanding Leadership Medal, and the NASA Equal Opportunity Medal. In 2019 the United States Congress gave her a Congressional Gold Medal, Congress' "highest expression of national appreciation for distinguished achievements and contributions by individuals or institutions."

2022 Honoree

Fereidoun Farassat

Dr. Fereidoun "Feri" Farassat (1944-2011) is recognized for making lasting contributions in the field of aeroacoustics, specifically in the development of noise prediction tools to help make rotating blades and propellers quieter, and for his passion in sharing his knowledge through teaching, including at the university level, international short courses, NASA lectures and even impromptu office visits.

Farassat was born in Ramhormoz, Iran, and received his bachelor's degree in engineering from the American University in Beirut, Lebanon. He put his degree to use as an engineer in Scotland before immigrating to the United States to study jet noise at Syracuse University, where he was awarded a master's degree in 1970. Then in just over two years he received his doctorate in aerospace engineering from Cornell University.

Upon graduation Farassat joined George Washington University. He continued as an adjunct professor after joining NASA Langley in 1979 in the Acoustics and Noise Reduction Division. His mathematical expertise led to better formulations to predict noise from rotating blades moving at subsonic and supersonic speeds. The noise prediction tools that use these formulations have helped the worldwide acoustics community better understand and predict noise for civil and military helicopters, propeller-driven aircraft, advanced concepts including open rotors, and more recently noise from unmanned aircraft systems, popularly known as drones.

Farassat's work received early NASA recognition when his technical report, "Theory of Noise Generation from Moving Bodies with and Application to Helicopter Rotors," received the NASA Langley H.J.E. Reid Award in 1980. He published 149 papers over his career and was an aeroacoustics senior technologist at the time of his death in 2011.

Farassat was awarded the NASA Exceptional Service Medal twice - in 1987 and 1991. He was a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and the American Helicopter Society (now the Vertical Flight Society). He also received the highest international award in the aeroacoustics discipline, the AIAA Aeroacoustics Award, in 1996.

In recognition of lasting contributions in the field of aeroacoustics, specifically in the development of noise prediction tools to help make rotating blades and propellers quieter, and for his passion in sharing his knowledge through teaching.

2022 Honoree

Peter A. Gnoffo

Dr. Peter A. Gnoffo (1952-) is an international expert in aerothermodynamics who has made significant advancements in the better understanding of the heating environment for spacecraft and other entry vehicles, which helped improve the safety and success of NASA's human spaceflight and planetary exploration missions.

Gnoffo was born in Baltimore, Maryland. He earned a bachelor's in aerospace engineering from the Polytechnic Institute of Brooklyn in 1974, a master's in mechanical and aerospace engineering from George Washington University in 1977 and a doctorate in mechanical and aerospace engineering from Princeton University in 1980.

Gnoffo started at NASA Langley in 1974. One of the most significant accomplishments in his more than 40-year career was the development in the 1980s of the Langley Aerothermodynamic Upwind Relaxation Algorithm (LAURA) code, the first complete aerothermodynamics simulation software code for NASA reentry vehicles. It remains one of NASA's primary standard computational tools for predicting certain flow fields and aeroheating environments for spacecraft and probes flying through planetary atmospheres.

Gnoffo's expertise also contributed to the success of the space shuttle program from start to finish. He analyzed early surface pressure and temperature data, provided modeling and simulation numbers of infrared temperature sensor experiments and did state-of-the-art computational modeling of the fluid dynamic effects for the Columbia accident investigation. Gnoffo also took a lead role for entry aeroheating simulation so the space shuttle could return to flight and provided direct mission support to assess any damage suffered in subsequent shuttle flights.

When NASA went back to Mars with the Pathfinder mission in 1997 Gnoffo's pioneering computational efforts played a huge part in its success. It was the first time NASA had flown an entry vehicle based solely on computational predictions. Now, computational fluid dynamics are the primary tool for predicting aerodynamic and aerothermal environments for all Mars missions since then.

With NASA working to return to the Moon with the Artemis missions, Gnoffo continued to advance new, pivotal modeling and simulation codes for the Orion crew capsule reentry thermal environments data book before his retirement in 2017.

Gnoffo has written or coauthored more than 100 journal publications and conference papers. He is a fellow of the American Institute of Aeronautics and Astronautics and has served as associate editor of the "Journal of Thermo-physics and Heat Transfer." He was honored with the NASA Exceptional Scientific Achievement Medal in 1990, the NASA Exceptional Achievement Medal in 1998, the Presidential Rank Award in 2005, the NASA Exceptional Engineering Achievement Medal in 2005, and the NASA Distinguished Service Medal in 2017. Gnoffo also received a NASA Space Flight Awareness award and the "Silver Snoopy,"

In recognition of groundbreaking research in aerothermodynamics, especially advancing the understanding of the heating environment for spacecraft and other entry vehicles, helping improve NASA's safety and success of human spaceflight and planetary exploration missions.

a special honor given personally by NASA astronauts for outstanding achievements related to human flight safety or mission success.

2022 Honoree

Charles E. Harris

Dr. Charles E. Harris (1950-) had a variety of jobs before he came to NASA Langley, but once he arrived he made his mark as a visionary leader and strategist whose talents spanned structures and materials, aeronautics, NASA Langley's current and future research needs and spacecraft safety.

Born on a farm in Pittsylvania County, Virginia, Harris earned money for college by driving a school bus at 17. During community college in Danville, he worked as a textile machine operator, then earned an aerospace engineering bachelor's degree at Virginia Tech in 1972. He went on to receive a master's in engineering mechanics in 1973 and a doctorate in engineering science and mechanics in 1983, both from Virginia Tech. In 1973 he worked at a nuclear engineering firm, then taught at Virginia Tech until he went to Texas A&M University in 1983 as an aerospace engineering professor. NASA Langley lured him back east in 1987 to become the head of the Mechanics and Materials Branch.

As branch head, Harris planned, advocated for and led NASA's $50-million Airframe Structural Integrity Program to address structural failures in aging aircraft. It was a public-private partnership with the Federal Aviation Administration, the U.S. Air Force and industry that led to analytical tools that could predict fatigue damage in aging aircraft and new nondestructive inspection methods. He also served on a number of accident investigation and advisory boards.

Harris served as chief technologist for NASA's Structures and Materials Center of Excellence starting in 1997 and then became the deputy director of the Structures and Materials Competency in 2000, until he worked on a strategic planning team that came up with the idea of a think-tank style organization that could meet Langley's future needs. Harris led the effort to establish the NASA/academic partnership known as the National Institute of Aerospace (NIA), a non-profit research and graduate education campus. He became the director of the NIA management office from 2002-2003. The NIA opened in January of 2003 and continues in operation.

Harris went on to become the principal engineer of the NASA Engineering and Safety Center from 2003-2006, where he led teams of subject matter experts that performed independent investigations to solve some of NASA's most challenging technical problems, including ones that caused the Space Shuttle Columbia accident.

Harris returned to Langley management as the director of the Research Directorate from 2006 until his retirement in 2012. He not only led a team of 800 scientists, engineers and technicians, but also successfully advocated for a $50-million, 10-year program to study and develop advanced composite materials. He also led the development of a 20-year strategic revitalization plan which has resulted in a number of new buildings at Langley.

In recognition of accomplishments as a visionary leader and strategist whose talents spanned structures and materials, aeronautics, NASA Langley's current and future research needs, and spacecraft safety.

Harris has received a number of awards, including NASA's Outstanding Leadership Medal in 1997, NASA's Exceptional Achievement Medal in 2001, NASA's Exceptional Service Medal in 2006, NASA's Exceptional Achievement Medal in 2007, the Presidential Rank of Meritorious Executive in 2005, and Distinguished Executive in the Senior Executive Service in 2011. Harris was also inducted into the Virginia Tech Academy of Engineering Excellence in 2011.

2022 Honoree

Donald E. Hewes

Donald E. Hewes (1924-1985) was a Langley engineer whose inventions made it possible for humans to land and walk on the Moon. He conceived of what is now the Landing and Impact Research Facility, where the Apollo astronauts trained for six successful Moon landings and where engineers have crashed aircraft in the name of safety and drop tested space capsules to improve water landings for more than 50 years.

Born in Cobleskill, New York, Hewes received a bachelor's in aeronautical engineering from Rensselaer Polytechnic Institute in 1945. He started out as a design engineer in private industry working on the Ercoupe light plane, before joining NASA Langley where his initial work was on studies of low-speed stability and control of airplanes, reentry vehicles, and recovery devices using free-flight testing of radio-controlled dynamically scaled models.

That all changed in 1962 when, as legend has it, he was lying on his sofa and came up with the idea of a lunar landing facility. Hewes' 240-foot tall, 400-foot long structural concept, a gantry that is the tallest structure at NASA Langley, became operational in 1965 as the Lunar Landing Research Facility and is where techniques were developed for the rocket-powered Lunar Excursion Module to land on the Moon. Because the Moon has no atmosphere, and only one-sixth of the Earth's gravity, piloting the LEM was a real challenge. The innovative solution developed by Hewes and the team at Langley involved suspending the LEM vehicle by long cables constantly pulled upward to generate a downward gravity of one-sixth the Earth's. A complex system of electronics, servo systems and computer software allowed near "free flight" in a simulated lunar environment.

To make the simulated landing even more realistic Hewes and the team filled the base of the structure with dirt and modeled it to look like the Moon's surface. They angled floodlights to simulate lunar light and installed a black screen at the far end of the gantry to mimic the airless lunar "sky." Hewes, the head of the Spacecraft Research Branch, personally climbed into the fake craters to spray them with cans of black enamel paint so that the Apollo astronauts could experience the shadows they would see during the actual Moon landing.

Hewes not only helped humans land on the Moon, but also walk there. He was responsible for inventing the Reduced Gravity Walking Simulator, a simple contrivance made of canvas slings, a wooden walking surface and steel cables attached to an overhead lightweight trolley. This rig tilted a walker about 80 degrees from vertical by holding him up with two cables. Astronauts, suspended in mid-air, could practice moonwalking down the plywood surface. This innovative simulator prepared NASA's astronauts for the one-sixth gravity environment they would face walking on the lunar surface.

Hewes retired from NASA Langley in 1980.

In recognition of conception and development of inventive NASA Langley structures, such as the Lunar Landing Research Facility and Reduced Gravity Walking Simulator, that made it possible for humans to land and walk on the Moon.

2022 Honoree

Joseph S. Heyman

Dr. Joseph S. Heyman (1943-) spent his academic career studying physics, but it is his visionary work as an inventor and leader in nondestructive ways to test aircraft and spacecraft materials and structures that changed NASA Langley and helped the space shuttle fleet safely return to flight after accidents.

Born in New Bedford, Massachusetts, Heyman received a bachelor's degree in physics from Northeastern University in 1968 and then went on to earn a master's degree and doctorate in solid state physics in 1971 and 1975 from Washington University. He started at Langley as a co-op student in 1964, while an undergraduate.

An explosion at a wind tunnel at another NASA center in 1973 transformed his career. Heyman was part of an accident review committee that determined the explosion was caused by a bolt not tensioned properly. He returned to Langley and developed an instrument that could measure bolt stress using ultrasound. That was the start of his expertise in nondestructive evaluation (NDE).

Heyman created the country's preeminent NDE research and development laboratory at Langley. The NDE Sciences Branch that he founded made crucial contributions in the Space Shuttle Challenger accident investigation in 1986, the space shuttle's return to flight in 2005 following the Columbia accident and the Aloha Airlines Flight 243 and American Airlines Flight 587 investigations following accidents in 1988 and 2001.

Heyman became Langley's director of technology utilization in 1994, managed the Intellectual Property Office, the Small Business Innovation Research Program, and the Creativity and Innovation Program. He retired in 2002 as the Langley senior technologist.

Heyman holds 34 patents, primarily in ultrasonic nondestructive evaluation methods. He also developed spin-off medical applications including measuring bladder distention, monitoring teeth stability, and detecting small particles in the bloodstream. His research resulted in four prestigious R&D 100 Awards for innovation in research and development, the Arthur S. Flemming Award given to the top 10 outstanding federal scientists and the "Silver Snoopy," a special honor given personally by NASA astronauts for outstanding achievements related to human flight safety or mission success.

Heyman also received some of the NASA's highest awards for leadership including Exceptional Leadership, Exceptional Achievement and Exceptional Service medals.

In recognition of innovative work as an inventor and leader in nondestructive ways to test aircraft and spacecraft materials and structures that helped make NASA Langley a nationally known nondestructive evaluation laboratory.

2022 Honoree

Paul F. Holloway

Paul F. Holloway (1938-2013) was an international authority in hypersonic aerodynamics and space vehicle entry-flight mechanics who not only helped develop the space shuttle, but also became NASA Langley's sixth center director.

Born in Poquoson, Virginia, Holloway grew up within a few miles of the research facility where he would spend his 31-year career. He came to Langley as an aerospace engineer in 1960 after receiving a bachelor's degree in aeronautical engineering from Virginia Tech. He later attended the Advanced Management Program at Harvard Business School.

Before becoming center director in 1991, Holloway worked primarily in spaceflight research. Holloway was appointed head of the Systems Analysis Section, Aero-Physics Division, in 1969; head of the Aerospace Operations Analysis Branch, Space Systems Division, in 1971; and chief of the Space Systems Division in 1971. In 1975, Holloway became director for space, and 10 years later, in 1985, he was named Langley deputy director.

As a charter member of the Space Shuttle Task Group, his team leadership was key to the testing and certification of the space shuttle's thermal protection system before the orbiter's first flight in 1981. That special outer barrier, made up of seven different materials, was the first and one-of-its-kind system for spaceflight. Holloway also strongly supported atmospheric research, including two experiments that flew on the Space Shuttle and the international SAGE III-Meteor-3M science mission with the Russians, which helped provide better ozone and other measurements of Earth's atmosphere.

Before retiring as center director in 1997, Holloway wrote 42 technical publications and earned numerous awards. They included the NASA Outstanding Leadership Medal in 1980, the NASA Exceptional Service Medal in 1981, the NASA Distinguished Service Medal, the NASA Equal Employment Opportunity Medal in 1992, the Presidential Rank of Meritorious Service in 1981, and two Senior Executive Service Distinguished Presidential Rank Awards in 1987 and 1993. Holloway also served as the co-director of the NASA/Department of Defense National Space Transportation and Support Study team.

He was a fellow of the American Institute of Aeronautics and Astronautics and the American Astronautical Society and was a member of the International Academy of Astronautics. Holloway was also inducted into Virginia Tech's Academy of Engineering Excellence in 2002.

In recognition of internationally recognized technical contributions in hypersonic aerodynamics and space vehicle entry-flight mechanics, significant contributions in the development of the space shuttle, and leadership as NASA Langley's sixth center director.

2022 Honoree

Ajay Kumar

Dr. Ajay Kumar (1946-) is a world-class leader in the field of computational fluid dynamics, having introduced its use in the analysis and design of scramjet engines and hypersonic vehicles.

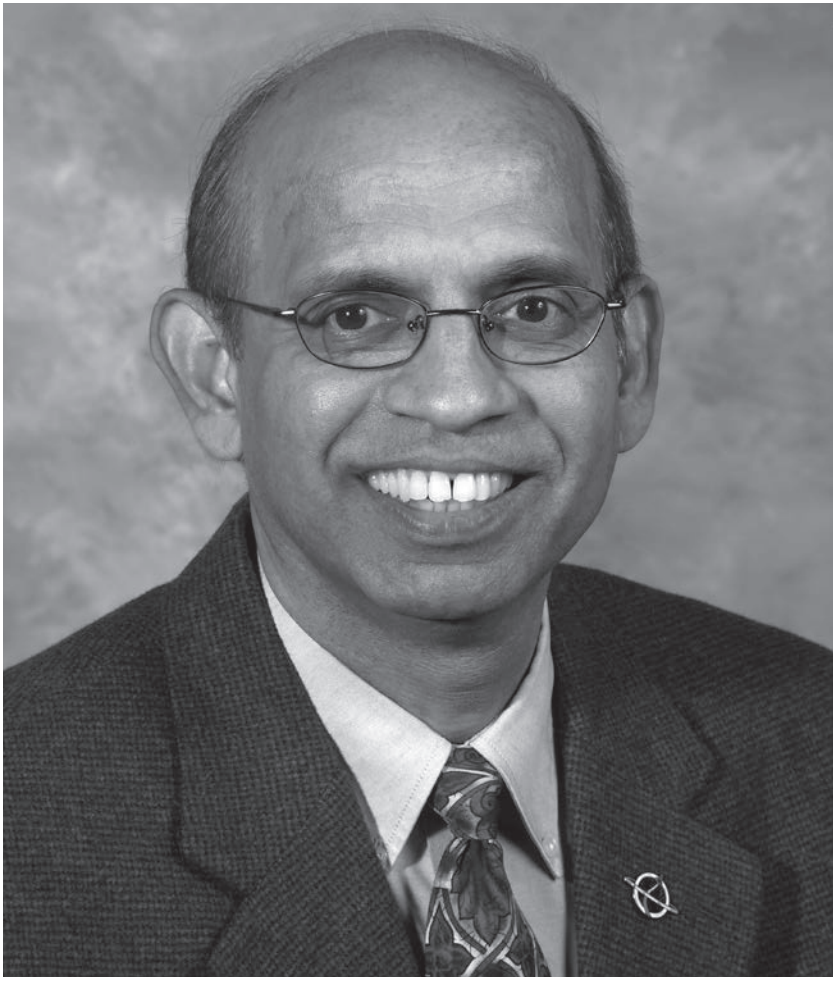
Kumar was born in Meerut City, U.P., India. He earned a bachelor's degree in mechanical engineering from the Indian Institute of Technology in 1968, a master's degree in aeronautical engineering from the Indian Institute of Science in 1970, and a doctorate in aerodynamics from Indian Institute of Technology (IIT) in 1974. He taught at IIT from 1973-75 before coming to NASA Langley under a National Research Council fellowship in 1975. He later earned a master's degree in engineering administration in 1984 from George Washington University.

Kumar began his 30-year NASA career in 1981. He worked to advance the use of computational tools for predicting aeroheating environments for planetary entry systems. That involved improving the state-of-the-art in computational fluid dynamics as an analysis and design tool. His research and development led to computational tools that studied hypersonic configurations under the National Aero-Space Plane program in 1992 and that allowed the Galileo probe to survive through intense atmospheric heat to land successfully on the planet Jupiter in 1995. Kumar also provided critical support to the Hyper-X program, which developed a hypersonic air-breathing engine that in 2004 achieved a record-breaking speed of close to Mach 10, or 10 times the speed of sound.

Kumar led the Laminar Flow Control project team, a NASA-industry effort from 1993-1995 that successfully demonstrated supersonic laminar flow control at Mach 2 during flight tests. Moving into more management roles at Langley, Kumar started as chief of the Gas Dynamics Division in 1995, and between 1998 to 2004 served as the head of the newly formed Aerodynamics, Aerothermodynamics and Acoustics Directorate, which was responsible for overseeing 30 wind tunnels and labs. From 2004 to 2012 he served as the director of the Systems Analysis and Concepts Directorate, and from 2009 to 2010 was the acting director of Engineering.

Also looking toward Langley's future, Kumar led several strategic initiatives, including the Facilities and Related Service Team in 2001, the Career Progression Paths Team in 2006, the Technical Quality Enhancement Team in 2010 and the Workforce Revitalization Strategy Team in 2012. He retired in 2012.

Kumar is the author or coauthor of 130 technical publications and has helped edit four books on topics related to transition, turbulence, combustion, and advanced numerical algorithms. He served on the editorial advisory board of the International Journal of Computers and Fluids, the Technical Advisory Committee of the European Hypersonic Database, and co-chaired two AGARD working groups (1997-2002) on hypersonics. Kumar has won many NASA and other awards, including the prestigious Gene Zara Award (1992) for his contributions to the National Aero-Space Plane Program, the NASA Exceptional Scientific Achievement Medal (1992), the NASA Outstanding Leadership Medal (2007 and 2012), and the Presidential Rank Award for Meritorious Executive (2007).



In recognition of world-class leadership in the field of computational fluid dynamics, having introduced its use in the analysis and design of scramjet engines and hypersonic vehicles, and for leading strategic initiatives that improved Langley's facilities and workforce.

He is a fellow of the American Institute of Aeronautics and Astronautics and has received the Engineer Alumni Achievement Award from George Washington University, and the Distinguished Alumnus Award from the Indian Institute of Science.

2022 Honoree

James Donald Lawrence, Jr.

Dr. James Donald "Don" Lawrence, Jr. (1933-2002) was an atmospheric scientist who started out studying the environmental effects of supersonic aviation, but whose successful leadership helped establish Langley as a NASA "focal center" for atmospheric environmental science.

Lawrence was born in Portsmouth, Virginia. He received a bachelor's degree from the Virginia Military Institute and a doctorate in physics from the University of Virginia. Before coming to NASA Langley in 1967, Lawrence was a physics professor at the College of William and Mary beginning in 1960.

NASA started focusing specifically on atmospheric science with the establishment of the Office of Applications in 1972. Leaders had already asked Lawrence the year before to organize the Remote Measurement of Pollution Workshop, which became the blueprint for NASA's environmental sciences programs over the next two decades. He went on to create and lead the Environmental Quality Program Office at Langley whose scientists specialized in the remote measurement of temperature and gases from satellites, including the Limb Infrared Monitor of the Stratosphere and the Stratospheric Aerosol Measurement experiments on Nimbus 7.

As a result of their successes, Langley received additional funding for atmospheric research and sensor technologies and in 1976 Lawrence was made chief of the newly established Atmospheric Science Division. He held that position until his retirement in 1994. Lawrence focused Langley research on atmospheric chemistry of the troposphere and stratosphere, the Earth's radiative energy balance, the effect of clouds on the energy balance, and atmospheric modeling. That led to Langley winning more than a half dozen instrument proposals, including: the Stratospheric Aerosol Experiment (SAGE); SAGE II; Measurement of Air Pollution from Satellites; Halogen Occultation Experiment; the Earth Radiation Budget Experiment; and the Clouds and the Earth's Radiation Energy System.

Lawrence also formed strong partnerships with Langley's engineers who had expertise in the project, technology, and engineering challenges of spaceflight instrument hardware development.

He was a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and a recipient of the NASA Exceptional Scientific Achievement Medal, the NASA Outstanding Leadership Medal, the NASA Senior Executive Service Presidential Rank of Meritorious Service award in 1986 and 1993, and the AIAA Losey Atmospheric Sciences Award.

In recognition of exemplary leadership in early atmospheric science research that helped establish NASA Langley as a focal center for atmospheric environmental science and that for decades served as the blueprint of NASA's environmental sciences programs.

2022 Honoree

Domenic J. Maglieri

Domenic J. Maglieri (1929-) is an internationally recognized expert on sonic boom, the sound created from shock waves when an object moves faster than the speed of sound. His accomplishments include successful research, development and flight testing of sonic boom reduction concepts.

Born in Pittsburgh, Pennsylvania., Maglieri earned his bachelor's degree in mechanical engineering from the University of Pittsburgh in 1951. He came straight to NASA Langley to enjoy a 35-year career that focused on trying to better understand and predict window-rattling sonic booms that have hampered the development of U.S. supersonic airliners. His involvement started in 1957 with the first sonic boom flight testing and has continued for more than six decades at NASA and in private industry.

NASA assigned Maglieri to develop a sonic boom database. He designed and led flight tests involving NASA, the U.S. Air Force and the Federal Aviation Administration (FAA) that measured the sonic signatures of various aircraft and spacecraft as they broke the sound barrier. The data and its analyses significantly improved the understanding of the sonic boom phenomenon.

In the 1960s, Maglieri was involved in four major community overflight programs in support of the U.S. supersonic transport program. NASA also selected him as the boom evaluator on FAA supersonic transport proposals and he represented the FAA as the U.S. technical observer to Concorde boom flight tests in France.

For a decade, Maglieri advocated for a flight experiment to demonstrate that theoretical approaches to changing the fundamental nature of sonic boom would work in the real atmosphere and quiet impacts on the ground. The result was a 2003 private-public flight test, known as the Shaped Sonic Boom Demonstration, that used an F-5E jet with a modified fuselage to show that the airplane's shock wave and accompanying sonic boom could be shaped and, thereby, reduced. The test's success offered hope that with additional research and technology development, quiet supersonic airplanes might one day be able to fly over land instead of restricted to use over water. NASA is currently working with industry on some of those technologies as part of Quesst, a mission that includes flying the X-59 experimental aircraft over communities to collect data that could enable quiet commercial supersonic flight over land.

After his retirement from NASA Langley in 1986, Maglieri continued his work at a private company. He has played a key role in more recent sonic boom research and flight test planning and has mentored and inspired generations of younger researchers.

Maglieri has authored or coauthored more than 170 publications, the majority on sonic boom. He was also the lead in writing the historical and technical review book, "Sonic Boom: Six Decades of Research." He received six NASA awards, two from the FAA and

In recognition of six decades of commitment to furthering the understanding of sonic booms, and for the successful accomplishment of research, development, and flight testing of sonic boom reduction concepts.

three from private industry for contributions in the sonic boom arena. He is a fellow of the Acoustical Society of America, a board-certified member of the Institute of Noise Control Engineering and an associate fellow of the American Institute of Aeronautics and Astronautics (AIAA). He was named Peninsula Engineer of the Year in 1990 by the Society of Professional Engineers, and National Engineer of the Year in 1993 by the AIAA.

2022 Honoree

Samuel E. Massenberg, Sr.

Dr. Samuel E. Massenberg, Sr. (1927-2014) was an educator who created the highly successful Langley Aerospace Research Summer Scholars (LARSS), an internship program that has helped train and inspire thousands of students interested in mathematics, science, technology and engineering careers. His leadership also helped NASA reach millions more students through innovative distance learning television programs.

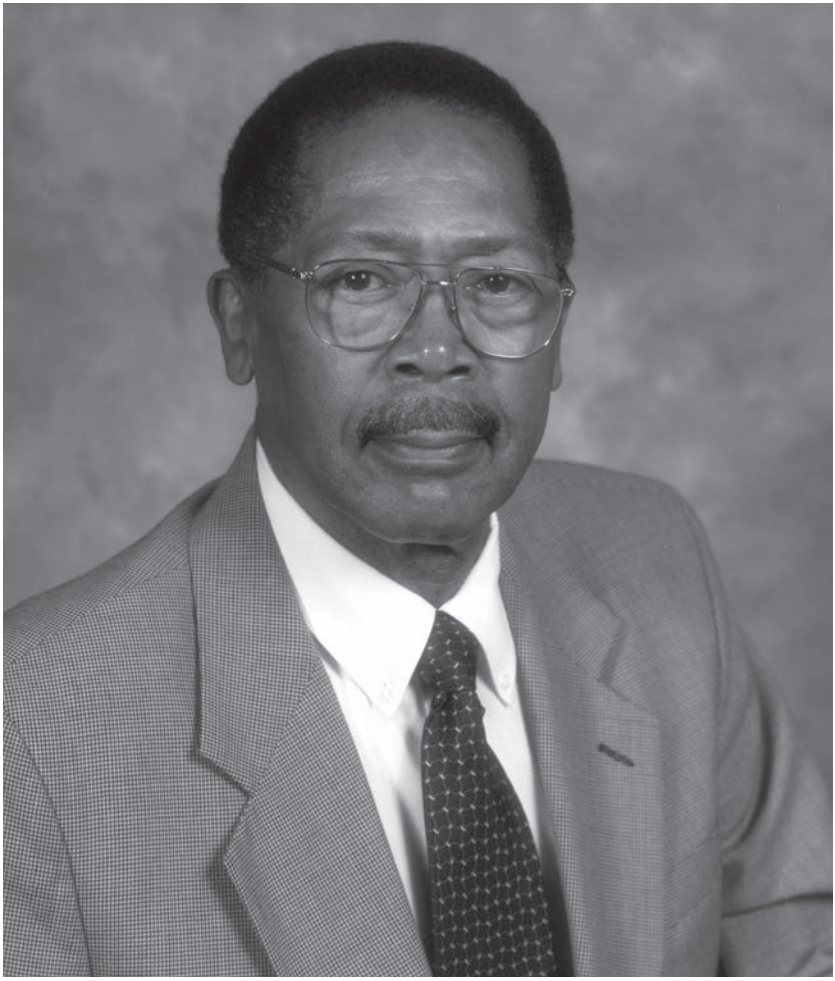
Massenberg was born in Detroit, Michigan. He left his law studies at Wayne State University in 1950 to train as a pilot in the U.S. Air Force. He fought in the Korean War and spent eight months in a prisoner of war camp in North Korea, before becoming a bomber pilot in the Strategic Air Command, eventually rising to the rank of lieutenant colonel. After the war he earned a bachelor's degree at Ohio State University in 1957, taught at North Carolina A&T University, then went on to receive a doctorate from Virginia Tech. Before coming to NASA Langley in 1980, Massenberg was the dean of men at Hampton University.

At Langley, Director of Education Massenberg envisioned internships that could offer students real world experience and introduce them to career opportunities at NASA and the aerospace industry while helping NASA Langley scientist and engineer mentors with research. He created the LARSS program that began with a class of 15 in 1986 and grew to include more than 250 interns annually until it merged with a NASA-wide internship effort in 2017. The Langley internship program was listed in Princeton Review's "America's Top 100 Internships" for three straight years and was cited in the Congressional Record.

In the early 1990s, Massenberg also served as the director of the NASA Minority University Research and Education Division and created the NASA University Research Centers to promote historically black colleges and universities and to train more minorities and faculty in science, technology and research.

Massenberg saw the value in trying to reach even more students, so he moved NASA into what were then newer educational opportunities - distance learning programs, with aerospace-related content, broadcast to more than 15 million kindergarten-through-high school classroom students. One of them, NASA CONNECT, was twice recognized as "best in the USA" by the U.S. Distance Learning Association. Every Langley distance learning program, including NASA CONNECT, NASA SCI Files, Kids Science News Network, NASA Live, and Destination Tomorrow received a NASA Group Achievement Award after airing on 250 public broadcast stations. The programs have also garnered 12 Emmy Awards for excellence in television.

Massenberg won numerous awards for his work in education. In 2002 NASA Langley nominated him for the prestigious "Service to America" medal. He was a finalist as one of the top 20 federal employees in the nation. Massenberg also received the NASA Exceptional Service Medal in 1988, the NASA Exceptional Achievement Medal in 2000 and the Federal Distinguished Executive Award in 2002. He retired from NASA Langley in 2006.



In recognition of world-class leadership in the field of education, establishing the Langley Aerospace Research Summer Scholars program, which the Princeton Review called one of America's top 100 internships, and development of Emmy Award-winning distance learning video programming.

2022 Honoree

Werner Pfenninger

Dr. Werner Pfenninger (1913-2003) was an early pioneer and world-renowned expert in laminar flow control research and technology developments. He was also an aircraft design visionary who introduced a transonic strut- or truss-braced wing concept that is being developed now, almost 70 years later, as manufacturers look for ways to decrease fuel consumption and emissions.

Pfenninger was born in Hinwil, Switzerland. He came to the U.S. in 1948 after receiving his technical education and doctorate at the Swiss Federal Institute of Technology. He originally worked for aircraft manufacturers, where he began his laminar flow control (LFC) experiments. Smooth, even flow over a wing is called laminar flow and it's what allows an airplane to fly efficiently. Airflow that separates from the wing's surface causes turbulence, which results not only in a bumpy ride for passengers, but also increased drag that reduces efficiency and performance. Understanding and controlling these aerodynamic forces on the wing is key to increased safety, better fuel performance, and the ability to carry more weight.

Pfenninger's experiments included the installation of carefully designed suction slots on an airplane wing that he theorized would improve laminar flow. His slotted airfoil design was tested in a NASA Langley pressure tunnel in 1951 and it achieved the highest laminar flow ever at that time. He also obtained successful results when he reactivated LFC flight research in the U.S. with the use of a glove on an F-94 aircraft. Pfenninger continued making his mark in laminar flow control research in private industry, until he came to NASA Langley in 1976 where his experiments and leadership made Langley a worldwide leader in LFC technology development.

Among his advancements were: unique supercritical shockless LFC airfoils to maintain 100 percent laminar flow in pressure tunnel tests; an experiment that successfully demonstrated that LFC and supercritical technology could be combined in a superior airfoil with 60 percent less drag; and the co-development of a low-speed natural laminar flow airfoil that was successfully tested by a small private plane manufacturer. Pfenninger also acted as a consultant of successful laminar and hybrid laminar flow flight tests at subsonic and supersonic speeds.

Pfenninger used his multidisciplinary expertise to introduce a transonic truss-braced wing concept for aircraft in 1954, a design that decades later is being tested and refined by private industry and in NASA wind tunnels. The configuration, which helps increase fuel efficiency, features long, slender wings that are supported by trusses.

Pfenninger authored or coauthored more than 200 scientific and technical papers. He was a fellow of the American Institute of Aeronautics and Astronautics and frequently sought after as a consultant by industry and universities worldwide. He retired from NASA Langley in 1994.

In recognition of pioneering research and expertise in laminar flow control research and technology developments, and as an aircraft design visionary of a transonic truss-braced wing concept that can decrease fuel consumption and emissions.

2022 Honoree

James M. Russell III

Dr. James M. Russell III is an internationally recognized Earth scientist who, over the last 60 years, has made discoveries that have led to measures to help save our planet, including the Montreal Protocol treaty in 1987 designed to protect the Earth's ozone layer.

Born in Newport News, Virginia, Russell received a bachelor's degree in electrical engineering from Virginia Tech in 1962. He went on to earn a master's in electrical engineering from the University of Virginia in 1966 and a doctorate in aeronomy from the University of Michigan in 1970.

Russell began at NASA Langley in 1962 just as NASA started to focus more on environmental and atmospheric sciences. He was part of the early team that built NASA Langley's expertise in that area and helped Langley win successful proposals for a number of atmospheric space instruments. One of the first was the Limb Infrared Monitor of the Stratosphere experiment that launched on the Nimbus 7 satellite in 1978. Russell proposed and was the co-principal investigator of the instrument that measured nitrogen, oxygen, ozone, water, and temperature in Earth's upper atmosphere. It was the first of two key atmospheric science satellite instruments led by NASA Langley.

Later Russell proposed the Halogen Occultation Experiment (HALOE) for flight on the Upper Atmospheric Research Satellite that was launched from the Space Shuttle Discovery in 1991. It was an especially important Langley mission because it addressed the effect of chlorofluorocarbons on the ozone layer from space. Langley built and tested the instrument in-house. It operated for 14 and a half years in orbit, providing global-scale results that were used to assess the impact of chlorofluorocarbons and other chlorine compounds on the ozone layer.

Russell published vital evidence, using HALOE data, that chlorofluorocarbons were responsible for ozone destruction, confirming that the hole in the ozone layer was human produced, not a natural phenomenon. The Montreal Protocol treaty banned ozone-depleting chemicals, including chlorofluorocarbons in 1987.

Another Russell-led Earth-orbiting mission, Sounding of the Atmosphere Using Broadband Emission Radiometry, launched in 2001, and is still providing data after 20 years in orbit for more than 2000 peer-reviewed publications. Russell is also principal investigator of the Aeronomy of Ice in the Mesosphere launched in 2002 that is still operating in orbit. Its data so far have resulted in 300 peer-reviewed papers.

Russell left NASA Langley in 1996 to help establish the Center for Atmospheric Sciences at Hampton University. He is the author or coauthor of more than 500 peer-reviewed journal articles in the fields of engineering and atmospheric science. In 2013 he was named an American Geophysical Union fellow for his leadership in developing and operating experiments, for answering questions about the Earth's atmosphere, and for the sustained impact of his work.

In recognition of 60 years of Earth science discoveries that have led to measures to help save our planet, including the international Montreal Protocol treaty in 1987 designed to protect the Earth's ozone layer.

2022 Honoree

Terry L. St. Clair

Dr. Terry L. St. Clair (1943-) is a nationally known chemistry expert whose inventions and innovations in materials and materials science have had a lasting impact on NASA programs, the nation, and the world. His contributions have included novel plastics and processes for aerospace applications, many of which ended up commercialized for use in industry.

St. Clair was born in Roanoke, Virginia, and graduated with a bachelor's degree in chemistry from Roanoke College in 1965. He earned a doctorate in organic chemistry in 1973 from Virginia Tech.

St. Clair came to NASA Langley in late 1972 as a post-doctoral researcher, but officially started in 1975. His early work involved developing advanced adhesives for NASA's supersonic aircraft program that could be used to bond titanium structures. His efforts led to several patents in polymer technology and production of a number of the adhesives. One of those, called LaRC-160 Matrix Resin, was used by private industry in the space shuttle program. Another, LaRC-TPI - a novel high temperature adhesive - was licensed for commercial electronic applications.

As a leading national materials expert, St. Clair served on three NASA shuttle teams where his unique chemical knowledge helped assess and improve the bonding of the shuttle's ceramic tiles, eliminate debris during take-offs, and determine the chemical issues that contributed to loss of foam on the shuttle's main tanks.

St. Clair also served as the head of the Advanced Materials Branch. His leadership resulted in modernization of the branch's analytical capabilities, the creation of a major program in nanotechnology, a smart materials laboratory, two other experimental labs, and the recruitment and mentoring of a talented, new generation of researchers. St. Clair also mentored potential chemists outside of NASA Langley as an adjunct professor at both Virginia Tech and the College of William and Mary. He retired in 2001.

St. Clair has been awarded 100 patents worldwide and has contributed to more than 150 publications and presentations. His inventions won four prestigious R&D 100 Awards for innovation in research and development and twice were selected as NASA Invention of the Year. St. Clair was awarded two NASA Exceptional Scientific Achievement Medals in 1985 and 1995. He served as the president of the Adhesion Society in 1992. He was also named a Fellow of the Adhesion Society.

In recognition of groundbreaking inventions and innovations in materials and materials science that have had a lasting impact on NASA programs, the nation, and the world, including novel plastics and processes for aerospace applications.

2022 Honoree

Darrel R. Tenney

Dr. Darrel R. Tenney (1942-) is an expert in aerospace metals and composite materials who led research efforts to advance lightweight materials and structures for improved aircraft performance and a NASA Aeronautics basic research program in airframe systems that explored futuristic vehicle concepts, revolutionary technologies, and new research methods.

Born in Buckhannon, West Virginia, Tenney received his bachelor's degree from West Virginia Wesleyan University in 1964. He was an assistant professor at Virginia Tech where he earned a doctorate in materials engineering in 1974, shortly before coming to NASA Langley as a senior researcher. He is also a graduate of a Harvard University management program.

Tenney became head of the Environmental Effects Branch in 1980, then assistant chief of the Materials Division in 1986. He became division head a year later and worked to modernize Langley's materials research capabilities.

Tenney also promoted research on a variety of new materials, including toughened graphite-epoxy composites, textile and stitched composites, polyimides, films, adhesives, and many others. Some of these materials were used in commercial and military aircraft, resulting in reduced vehicle weight, better fuel efficiency, and increased range. Langley alloy research also went into spacecraft design for the space shuttle cryotanks and the X-37B next generation launch vehicle.

Tenney became director of the Aerospace Vehicle Systems Technology Office from 1996-2004. In that leadership role he planned and advocated for NASA's $230 million basic research program in airframe systems including advanced vehicle concepts, lightweight structures and materials, advanced aerosciences for design, aero mechanics of highly maneuverable vehicles, noise reduction, and technologies to enhance reliability and flight safety. In 1999-2000, Tenney was also a driving force in promoting the NASA nanotechnology initiative with Langley taking the lead role.

Tenney helped set the course for NASA aeronautics' future with his 2001 paper, "Aeronautics Vision for the 21st Century," which highlighted the use of smart sensors and other technologies for next generation aircraft. He was also the key architect of the "NASA Aeronautics Blueprint - Toward a Bold New Era of Aviation" in 2002, the central building block of a new national aeronautics framework.

Tenney authored or coauthored more than 80 publications and has won a number of awards, including the Presidential Rank of Meritorious Award for outstanding leadership in 1996 and 2001. He is a fellow of the American Society of Materials. Following his retirement in 2004, Tenney was the lead author of two books, including "Structural Framework for Flight," which documented Langley's major accomplishments in materials and structures for the past 60 years.

In recognition of expertise that advanced lightweight materials and structures for improved aircraft performance, and for planning NASA's basic research program in airframe systems that explored futuristic vehicle concepts, revolutionary technologies, and new research methods.

2022 Honoree

Bruce A. Wielicki

Dr. Bruce A. Wielicki (1952-) is a world-renowned climate science researcher who is a leading expert in clouds and their role in the Earth's radiative energy balance. He was part of a team of international scientists who contributed to United Nations climate change reports that won the Nobel Peace Prize in 2007.

Born in Milwaukee, Wisconsin, Wielicki earned a bachelor's degree in applied mathematics and engineering physics from the University of Wisconsin-Madison in 1974, and a doctorate in physical oceanography from Scripps Institute of Oceanography in 1980. He worked at the National Center for Atmospheric Research before coming to NASA Langley in 1980.

Early in his Langley career he was the co-investigator on the Earth Radiation Budget Experiment (ERBE). It consisted of three satellites, one of which was launched from the space shuttle in 1984, that helped scientists better understand how clouds and aerosols, as well as greenhouse gases, affect the Earth's daily and long-term weather.

With the success of ERBE Wielicki moved on the become principal investigator on the First International Satellite Cloud Climatology Project Regional Experiment, for which he was also the project scientist from 1987 to 1994. These first two projects led Wielicki to embrace the philosophy that an integrated multi-instrument approach is necessary to improve the accuracy of data and enhance their use in scientific applications, so he successfully proposed the Clouds and the Earth's Radiant Energy System (CERES) project.

Wielicki assembled a multi-agency, university and international science CERES team comprised of instrument and software engineers; cloud, aerosol and earth radiation budget remote sensing experts; and key members of the climate research and modeling communities. Under his leadership the group conceived of and implemented what remains to this day the most highly integrated scientific dataset from any satellite project at NASA. So far, the CERES team has used 31 instruments on 25 spacecraft to produce an accurate description of the radiation budget, not only on top of the atmosphere but also at the surface and within the atmosphere. CERES data have been used in more than 2,200 peer-reviewed publications with over 91,000 citations. Because of Wielicki's leadership NASA Langley has become a global leader in Earth radiation budget and climate studies.

Wielicki was also a co-investigator on the NASA Cloudsat and Cloud-aerosol Lidar and Infrared Satellite Observations missions.

Wielicki's work led to an even more advanced, rigorous and integrated global climate observing system - the Climate Absolute Radiance and Refractivity Observatory (CLARREO) satellite mission he successfully proposed. Selected in 2008, CLARREO is focused on high accuracy climate decadal change observations - five to 10 times more accurate than current observations. A scaled-down version is scheduled to launch to the International Space Station in 2023, two years after his 2021 retirement.

In recognition of 40 years of world-renowned climate science research in the role clouds play in the Earth's radiative energy balance, and contributions as part of an international science team that developed United Nations climate change reports and earned the 2007 Nobel Peace Prize.

Wielicki has authored or coauthored more than 150 publications and won numerous awards. They include the NASA Exceptional Science Achievement Medal in 1992, the American Meteorological (AMS) Henry G. Houghton Award in 1995, the Presidential Rank and AMS Fellow award in 2008, and the AMS Warren M. Washington Research and Leadership Medal in 2021.

2022 Honoree

A. Thomas Young

A. Thomas "Tom" Young (1938-) started as an engineer working on sounding rockets in the early years of the space race, then went on lead highly successful Langley projects to the Moon and Mars, before moving on to management positions at NASA Headquarters, two other NASA centers, and private industry.

Young, born on Virginia's Eastern Shore in Wachapreague, graduated from the University of Virginia in 1961 with a bachelor's degree in aeronautical and mechanical engineering. He later went on to earn a master's degree in 1972 from the Massachusetts Institute of Technology, where he attended as a Sloan Fellow during his time at NASA Langley.

Young started at Langley in 1961 developing attitude control systems and trajectory design for sounding rockets and space vehicles. He moved on to the Lunar Orbiter Project Office where he led the mission study group. The group's mission risk assessment resulted in a "distributed photographic mission" that provided images of a large part of the Moon's surface for potential Apollo landing sites, instead of just a select few. Five successful lunar orbiter missions launched in 1966 -1967 and photographed 99 percent of the lunar surface. Those images were used to establish safe landing zones for the six Apollo Moon landings.

Young's out-of-this-world career continued when he was assigned to the Mars Viking program, first as science integration manager and eventually mission director. His roles required him to work with teams across the country at NASA and the Jet Propulsion Laboratory as well as contractors. The Viking project, with its two landers and orbiters that successfully arrived at the Red Planet, developed many of the key technologies and provided the cornerstone of today's Mars exploration program.

With his establishment of the Mission and Science Working Group, Young helped bring NASA Langley engineering design capabilities to the planetary science community. The working group, which spanned the length of the Viking project from 1968 to 1976, allowed scientists to participate in spacecraft and mission design, while providing a path for NASA and industry engineers to be part of science planning.

After Langley, Young became director of the Planetary Program at NASA Headquarters in 1976 and was appointed deputy director of NASA's Ames Research Center in Silicon Valley, California, in 1978. Later, he served as the director of NASA's Goddard Space Flight Center in Greenbelt, Maryland, from 1979 to 1982. He left NASA in 1982 and joined Martin Marietta as vice president of aerospace research and engineering and became the president and chief operating officer of Martin Marietta from 1990 to 1995. When Martin Marietta merged with Lockheed, he was appointed executive vice president of the Lockheed Martin Corporation.

Young has received numerous honors and awards for his contribution to the nation's space program, including NASA's highest award, the Distinguished Service Medal, for his role in the Viking project. He also received the Outstanding Leadership Medal for his contributions

In recognition of significant contributions in the early years of the space race, including leadership of highly successful NASA Langley projects to the Moon and Mars, and in top management positions at NASA Headquarters, two other NASA centers, and private industry.

to the Voyager program, the Distinguished Executive Presidential Rank Award, and is a recipient of the Space Foundation's highest honor - the General James E. Hill Lifetime Space Achievement Award - in recognition of outstanding contributions to the betterment of humankind through the exploration, development, and use of space. Young is an honorary fellow of the American Institute of Aeronautics and Astronautics.

Langley Research Center
NACA & NASA's Hall of Honor
Acknowledgement

The Hall of Honor Committee wishes to acknowledge all those who have pursued their research and applied their technical and management skills to enable NACA and NASA Langley to achieve its goals. All contributions, both great and small, have added in significant ways to the overall preeminence of Langley, NASA, and the United States in the relentless and ever-challenging quest for knowledge of our world and worlds beyond.

Special acknowledgement to Kathy Barnstorff for her research and authorship of the Honorees' biographies and to Ira Abbott for his assistance with the pictures presented to the Inductees.

In Memoriam

Gail Langevin

Ms. Gail Langevin played a key role in the Hall of Honor Classes of 2015 and 2017. She worked tirelessly to coordinate activities with NASA Langley leadership, other centers, and NASA Headquarters to ensure the overall success of the program. She served as the focal point for the vast array of details to ensure that the right things happened at the right time. She was instrumental in connecting with family members to ensure their awareness of the honor and their presence at the induction ceremony. The success of the Hall of Honor has resulted in no small part from her untiring efforts. Sadly, Gail passed away on July 29, 2019. A memorial service was held in her honor at Wesley United Methodist Church in Hampton, Virginia.

Visit the Hall of Honor website at:
https://www.nasa.gov/langley/hall-of-honor

Langley Research Center
NACA & NASA's Hall of Honor
Hall of Honor Committee

The continued success of the Hall of Honor is due to the dedication of so many volunteers who have worked tirelessly ensuring our charter is fulfilled. Thank you to all the volunteers who have worked on the Hall of Honor Class of 2015, 2017 and 2022 Committees!

Duncan McIver, *LAA (Langley Alumni Association) Chair*

Damodar Ambur (2020 - 2021)
Daniel Palumbo (2022 - 2023)
Presidents, Langley Alumni Association

Bobby Berrier, *LAA*
David Bowles, *LAA*
Vicki Crisp, *LAA*
Kathy Ferrare, *LAA*
Del Freeman, *LAA*
Joel Levine, *LAA*
Steve Scotti , *LAA*
David Throckmorton, *LAA*
Bo Walkley, *LAA*
Faye Collier, *NASA*
Michelle Ferebee, *NASA*
Jonathan Ransom, *NASA*
Melanie Robinson, *NASA*
Julie Williams-Byrd, *NASA*
Rob Wyman, *NASA*
Mike Yaskowsky, *City of Hampton*
Bruce Sturk, *City of Hampton*
Deborah Douglas, *MIT/Former NASA Langley Historian*

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