The Ernest Orlando Lawrence Awards

January 19, 2021
United States Department of Energy
Virtual Ceremony
https://science.osti.gov/lawrence/Ceremony

An award given
by the U.S. Department of Energy


ERNEST · ORLANDO · LAWRENCE · MEMORIAL · AWARD ·
MCMI
MCMLVIII

Welcome

The Honorable Dan Brouillette,
Secretary of Energy
welcomes you to the virtual presentation of the

Ernest Orlando Lawrence Award

to

Yi Cui
Stanford University and SLAC National Accelerator Laboratory

Dana M. Dattelbaum
Los Alamos National Laboratory

Dustin H. Froula
University of Rochester

M. Zahid Hasan
Princeton University and Lawrence Berkeley National Laboratory

Daniel Kasen
University of California, Berkeley and Lawrence Berkeley National Laboratory

Robert B. Ross
Argonne National Laboratory

Susannah G. Tringe
Lawrence Berkeley National Laboratory

Krista S. Walton
Georgia Institute of Technology

January 19, 2021
United States Department of Energy
1000 Independence Avenue, SW
Washington, DC

Award Laureate Citations

Yi Cui

Stanford University and SLAC National Accelerator Laboratory

Energy Science and Innovation

For exceptional contributions in nanomaterials design, synthesis and characterization for energy and the environment, particularly for transformational innovations in battery science and technology.

Yi Cui is honored for his insightful introduction of nanosciences in battery research. His multiple innovative ideas have transformed the battery field in a very impactful way and enabled new types of high energy density batteries and low-cost energy storage solutions. Prof. Cui reinvigorated research in batteries by enabling new electrode materials with one order of magnitude higher charge storage capacity, including silicon anodes, lithium-metal anodes and sulfur cathodes. Prof. Cui is also the first to have developed cryogenic electron microscopy for battery materials.

Dana M. Dattelbaum

Los Alamos National Laboratory

National Security and Nonproliferation

For pioneering physical insights into shock and detonation physics, innovations in the development of Equations of State for energetics and polymers, and critical data for hydrodynamic simulations essential to the National Security programs.

Dana M. Dattelbaum is honored for several transformative scientific and intellectual achievements, including her pioneering work providing physical insights into shock and detonation physics, her innovations in the development of the Equations of State of a spectrum of energetics and polymers, and providing critical data for hydrodynamic simulations essential to the nuclear weapons program. Dr. Dattelbaum has played a pivotal and leading role in advancing the experimental study of materials under extreme conditions at Los Alamos National Laboratory.

Dustin H. Froula

University of Rochester

Fusion and Plasma Sciences

For innovative research in laser plasma physics including pioneering spatiotemporal pulse shaping techniques, focused laser plasma instability research, and novel high-resolution Thomson scattering methods that has significantly advanced the Department of Energy's mission.

Dustin H. Froula is honored for seminal and creative contributions in fundamental laser-matter interaction physics, and laser-driven plasma accelerators that have significantly advanced the Department of Energy's mission, including pioneering spatiotemporal pulse shaping techniques, focused laser plasma instability research, and novel high-resolution Thomson scattering methods. Together, these achievements have addressed long-standing questions in plasma physics, led to many first-of-their-kind measurements, and represent development of new, cutting-edge concepts in plasma optics which will shape the field in years to come

M. Zahid Hasan

Princeton University and Lawrence Berkeley National Laboratory

Condensed Matter and Materials Sciences

For groundbreaking discoveries using spin-angle-resolved photoemission spectroscopy, which elucidated the topological nature and electronic structure of topological insulators, topological phase transitions, and topological semimetals (Weyl fermions), revealing them as new phases of quantum matter.

M. Zahid Hasan is honored for experiments using advanced angle-resolved photoemission spectroscopy (ARPES) which lead to seminal discoveries of new phases of matter and new fermionic quasiparticles. His work has opened new areas in condensed matter physics, and holds promise for future transformative applications in materials sciences. Guided by predictions from ab initio calculations, he has focused on the search for, and discovery of, new quantum states and topological quasiparticles such as the helical Dirac fermion, and the Weyl fermion.

Daniel Kasen

University of California, Berkeley and Lawrence Berkeley National Laboratory

Nuclear Physics

For pioneering contributions in multi-messenger astrophysics, including seminal work on kilonovae, r-process nucleosynthesis, white dwarfs, and Type I and II supernovae; and for leadership in the application of high performance computing in astrophysics.

Daniel Kasen is honored for his outstanding achievements in nuclear astrophysics and scientific computing, advancing both theory and high performance computations and our understanding of the nuclear physics involved in the birth and death of compact objects (white dwarfs, neutron stars, and black holes) and the stellar explosions involving them (supernovae and compact object mergers). Specifically, he is recognized for development of state-of-the-art simulations of astrophysical phenomena, including developing the SEDONA code, prediction and modeling of kilonova, and the electromagnetic counterparts to the gravitational wave signals from neutron-star mergers.

Robert B. Ross

Argonne National Laboratory

Computer, Information, and Knowledge Sciences

For significant research contributions in the areas of scientific data storage and management, and communication software and architectures; and leadership in major DOE initiatives such as the SciDAC program.

Robert B. Ross is honored for his numerous and seminal contributions in high-performance computing (HPC), with outstanding contributions and achievements in the fields of parallel I/O, storage, data analysis, and communication software which have addressed real-world needs and, in-turn, enabled the advancement and research of the Department of Energy's science community. Specifically, Dr. Ross's leadership and investigations into underlying computer science technologies and the integration of those technologies into the real-world HPC ecosystem has resulted in innovative tools and largescale storage system designs (e.g., PVFS, MPICH, Parallel netCDF, and Darshan).

Susannah G. Tringe

Lawrence Berkeley National Laboratory

Biological and Environmental Sciences

For advances in sequence-based studies of microbial assemblies, revealing the roles of microbial communities in carbon cycling, in interactions with plants, and as drivers of methane production, nutrient cycling, greenhouse gas emissions, and water recycling.

Susannah G. Tringe is honored for her substantial contributions to foundational research, technological development, and application of experimental and computational tools and approaches in the field of metagenomics. Specifically, she is recognized for development and applications of high throughput DNA sequencing techniques (e.g., shot gun technique) to study microbial communities in numerous different environments including wetlands, seminal studies of plant-microbiome interactions in crop science, and early exploration of amplicon sequencing in environmental samples.

Krista S. Walton

Georgia Institute of Technology

Atomic, Molecular, and Chemical Sciences

For groundbreaking research on understanding and control of the hydrolytic and chemical stability of porous metal-organic frameworks in complex environments, and for its transformative impact on separation science..

Krista S. Walton is honored for her pioneering and interdisciplinary research of porous material stability under a variety of challenging conditions and advancing separation science. Working at the intersection of chemistry, computation, and chemical engineering, Prof. Walton has identified physical and chemical factors driving water stability of sorbents, especially metal-organic frameworks (MOFs), and the impact of defects and complex mixtures on the chemical stability of MOFs.

Energy Science and Innovation

Yi Cui

Stanford University and
SLAC National Accelerator
Laboratory

Yi Cui is a Professor in the Department of Materials Science and Engineering at Stanford University and SLAC National Accelerator Laboratory. He received B.S. in Chemistry in 1998 at the University of Science and Technology of China (USTC), Ph.D in 2002 at Harvard University. After that, he went on to work as a Miller Postdoctoral Fellow at University of California, Berkeley. In 2005 he became an Assistant Professor in the Department of Materials Science and Engineering at Stanford University. In 2010 he was promoted with tenure. His research interest is on nanotechnology for sustainability including energy and environment. He has published ~510 research papers and has an H-index of 206 (Google). In 2014, he was ranked NO.1 in Materials Science by Thomson Reuters as "The World's Most Influential Scientific Minds". He is an elected Fellow of American Association for the Advancement of Science, Materials Research Society, Electrochemical Society and Royal Society of Chemistry. He is an Executive Editor of Nano Letters. He is the Director of Precourt Institute for Energy, a Co-Director of the Bay Area Photovoltaic Consortium, a Co-Director of Battery 500 Consortium and Co-Director of Stanford StorageX Initiative. His selected awards include: MRS Medal (2020), ECS Battery Technology Award (2019), Dan Maydan Prize in Nanoscience (2019), Nano Today Award (2019), Blavatnik National Laureate (2017), MRS Kavli Distinguished Lectureship in Nanoscience (2015), the Sloan Research Fellowship (2010), KAUST Investigator Award (2008), ONR Young Investigator Award (2008), Technology Review World Top Young Innovator Award (2004). He has founded four companies to commercialize the energy and environment technologies from his lab: Amprius Inc., 4C Air Inc., EEnotech Inc. and EnerVenue Inc.

National Security and Nonproliferation

Dana M. Dattelbaum

Los Alamos National Laboratory

Dana M. Dattelbaum is a Research and Development Scientist within the Dynamic Experiments (M) division at Los Alamos National Laboratory (LANL). Dana currently leads the Dynamic Materials Properties portfolio at LANL for the National Nuclear Security Administration (NNSA); a program dedicated to providing experimental data, platforms, and diagnostics for studying materials responses relevant to nuclear weapons performance. She is also presently the Deputy Division Leader (acting) for M division, and the Laboratory's lead on Design for Manufacture initiatives for NNSA. She received a Ph.D. in Organic Chemistry from the University of North Carolina-Chapel Hill under the direction of Thomas J. Meyer, and joined the Materials Science and Technology division at LANL as a Director's-funded post-doctoral fellow in 2001. Her expertise and research interests are in the areas of shock and detonation physics, shock initiation of energetic materials, and studying materials at extreme conditions. Dana has over 175 publications (h-index of 31), and is Past-Chair of the American Physical Society's Topical Group on Shock Compression. Recent awards and honors include Los Alamos National Laboratory Fellow (2019), Laboratory Fellow's Prize for Leadership (2016), Fellow of the American Physical Society (2014), numerous DOE/NNSA Defense Program Awards of Excellence, and she was a finalist for the 2016 New Mexico Technology Council Women In Technology. She is the LANL representative for the Stockpile Stewardship Academic Alliance, a member of the editorial board of the Journal of the Dynamic Behavior of Materials, and serves on the Committee on Careers and Professional Development for the American Physical Society (2019-2021).

Fusion and Plasma Sciences

Dustin H. Froula

University of Rochester

Dustin Froula is a Distinguished Scientist and the Plasma & Ultrafast Physics Group leader at the Laboratory for Laser Energetics, and an Associate Professor of Physics at the University of Rochester. He attended the California Polytechnic State University, San Luis Obispo, receiving his B.S. in Physics (1998) before receiving his M.S. (2000) and Ph.D. (2002) degrees in Physics from the University of California, Davis. After working as a research scientist at the National Ignition Facility Inertial Confinement Fusion Directorate, at Lawrence Livermore National Laboratory (2002–2010), he spent a year on sabbatical at the University of California, Los Angeles where, in collaboration with J. Sheffield, S. Glenzer, and N. Luhmann, he completed the second edition of the book, Plasma Scattering of Electromagnetic Radiation: Theory and Measurement Techniques. He then joined the research staff at the Laboratory for Laser Energetics as a Senior Scientist. The group he leads consists of staff scientists, undergraduate students, graduate students, and the occasional high school student. He received the Department of Energy's Outstanding Mentor Award for his work with undergraduate and graduate students and he was selected as a fellow of the American Physical Society in 2017 for the "development and application of Thomson scattering to understand thermal transport and the onset of laser–plasma instabilities in indirect and direct-drive fusion experiments." In 2019, he was part of the team that was awarded the John Dawson Award for Excellence in Plasma Physics Research, "For innovative experiments that demonstrate turbulent dynamo in the laboratory, establishing laboratory experiments as a component in the study of turbulent magnetized plasmas, and opening a new path to laboratory investigations of other astrophysical processes." Prof. Froula's research interests are in the fields of Experimental Plasma and Laser Physics.

Condensed Matter and Materials Sciences

M. Zahid Hasan

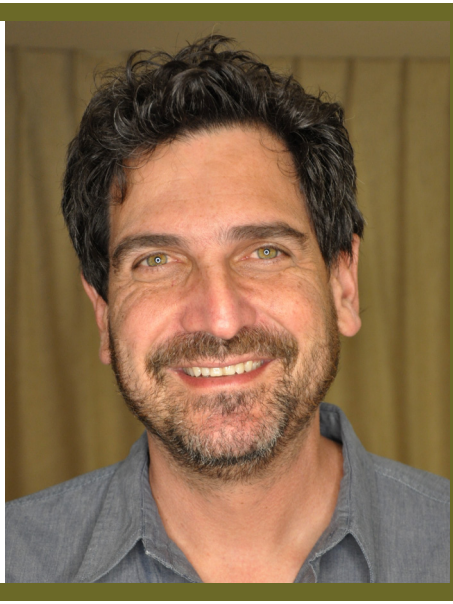
Princeton University and
Lawrence Berkeley National
Laboratory

M. Zahid Hasan is Eugene Higgins Professor of Physics and Principal Investigator of the Laboratory for Topological Quantum Matter at Princeton University. Hasan received his Ph.D. from Stanford University working at Stanford Linear Accelerator Center (SLAC) and Lawrence Berkeley National Laboratory. He was then a Robert H. Dicke Fellow in fundamental physics at Princeton and held extended visiting appointments at Bell Laboratories (Murray Hill), Lawrence Berkeley Laboratory and joined the faculty rank at Princeton. His research has focused on strongly correlated many-body electron systems, quantum Hall-like topological phases, exotic superconductors, Chern insulators, topological insulators in 2D and 3D, Dirac, Weyl magnets, quantum phase transitions, topological superconductors and Majorana zero modes, topological magnets and topological quantum computing physics. Hasan helped launch the field of Topological Insulators by directly detecting the novel topological surface states and thoroughly demonstrating their unusual properties using advanced spin-sensitive spectroscopic techniques. In 2015 Hasan observed the emergent Weyl fermions and novel Fermi arc surface states in topological semimetals. He has also made seminal contributions in the fields of topological phase transitions, topological magnets, topological superconductors and Kagome magnets. He has published over 200 articles and is listed among the most highly cited physicists worldwide. His experiments have been seminal in giving rise to the field of Topological Quantum Matter with more than 50,000 citations, which is now growing vigorously at the nexus of condensed matter physics, materials engineering, nanoscience, device physics, chemistry and relativistic quantum field theory. Hasan is an elected fellow of the American Physical Society and the American Academy of Arts and Sciences and has been honored with many awards for his scientific accomplishments.

Nuclear Physics

Daniel Kasen

University of California,
Berkeley and Lawrence
Berkeley National Laboratory



Daniel Kasen is a professor in the Departments of Physics and Astronomy at UC Berkeley, and a faculty scientist in the Nuclear Science Division at Lawrence Berkeley National Laboratory. He received his B.S. in physics from Stanford University, and an M.S and Ph.D. from UC Berkeley. Following graduate school, he was the Alan C. Davis prize postdoctoral fellow at Johns Hopkins University and a NASA Hubble fellow at UC Santa Cruz. Professor Kasen's research is in theoretical and computational astrophysics, with an emphasis on supernovae, neutron star mergers and other energetic phenomena. His work has used theory and simulations to predict the properties of stellar explosions and explain how they contribute to the cosmic origin of the heavy elements, probe the behavior of matter under extreme conditions, and can be applied to measure the expansion history of the universe. He is currently the director of the Theoretical Astrophysics Center at Berkeley, and the principle investigator of the ExaStar collaboration, a project under the DOE ExaScale Computing Project, which aims to use the most powerful high performance computers to simulate complex multi-physics astrophysical systems. Kasen's work has been recognized with several awards, including a Department of Energy Presidential Early Career for Scientists and Engineers, the Bruno Rossi Prize of the American Astronomical Society, a Simons Foundation Investigator Award, and a Fellowship of the American Physical Society, Division of Nuclear Physics.

Computer, Information, and Knowledge Sciences

Robert B. Ross

Argonne National Laboratory

Robert B. Ross is a computer scientist solving complex challenges in data communication and storage for supercomputers. His work has advanced world-leading computer science research and adapted it for use in numerous scientific endeavors. He is recognized for contributions in parallel file systems that underpin data storage on supercomputers, communication and input/output software that are foundations of scientific codes running on these platforms, monitoring tools that provide insight into how supercomputers are being used in production, and simulation capabilities that enable "what if" evaluation of potential new supercomputer features and architectures. As a leader in computer science, Rob has helped organize pathfinding workshops in storage and input/output, contributed to early exascale software plans, and served as interim division director of Argonne's Mathematics and Computer Science Division from 2016 to 2017. He currently is the director of the DOE SciDAC RAPIDS Institute for Computer Science, Data, and Artificial Intelligence through which computer science technologies are adapted and applied with Office of Science teams to achieve scientific breakthroughs. Rob received his Ph.D. in computer engineering from Clemson University in 2000 and joined Argonne National Laboratory in the same year. Currently he is a senior computer scientist at Argonne. He holds appointments with the Northwestern-Argonne Institute for Science and Engineering and the University of Chicago Consortium for Advanced Science and Engineering and is also a U.S. National Academy of Sciences Kavli Fellow. His work has earned him numerous awards, including the Presidential Early Career Award for Scientist and Engineers in 2004 and two R&D 100 awards, one for the MPICH message passing software in 2005 and one for the Darshan I/O monitoring tool in 2018.

Biological and Environmental Sciences

Susannah G. Tringe

Lawrence Berkeley National Laboratory

Susannah Green Tringe is the interim Director of the Environmental Genomics and Systems Biology division and Deputy for User Programs at the Department of Energy Joint Genome Institute (JGI), both at Lawrence Berkeley National Laboratory. Her research focuses on using nucleic acid sequence data to study communities of microbes from diverse environmental niches and understand their assembly and function. Her major research interests relate to microbial influences on greenhouse gas uptake and release in wetlands and how microbes interact with plants to affect growth, health and stress resistance. Susannah received her undergraduate degree in Physics from Harvard University then went on to a Ph.D. in Biophysics from Stanford University. She joined JGI / Berkeley Lab as a postdoc in 2003. There she developed techniques for using DNA sequence data for comparative analysis of whole microbial communities, rather than individual organisms. She has since used and expanded on these methods to demonstrate that microbes interact with each other and with their environment to perform functions that can potentially be harnessed for improved environmental and agricultural outcomes. In her various roles at the JGI user facility she has also worked to make genomics capabilities available to the broader research community for applications in energy and the environment. Susannah is coauthor on more than 150 research articles (h-index 72) and is a senior editor of the International Society for Microbial Ecology Journal as well as the American Society for Microbiology journal mSphere. She was the recipient of a DOE Early Career Research Program award, was named one of Popular Science's "Brilliant Ten" in 2011, and is a Fellow of the American Association for the Advancement of Science.

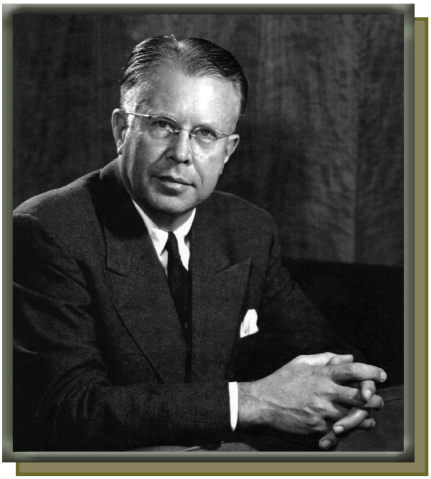
Atomic, Molecular, and Chemical Sciences

Krista S. Walton

Georgia Institute of Technology

Krista S. Walton is the Associate Dean for Research & Innovation in the College of Engineering and Professor and Robert “Bud” Moeller Faculty Fellow in the School of Chemical and Biomolecular Engineering at Georgia Tech. She received her B.S.E. in chemical engineering from the University of Alabama-Huntsville in 2000 and obtained her Ph.D. in chemical engineering from Vanderbilt University in 2005, working with Prof. M. Douglas LeVan. Prof. Walton completed an ACS PRF Postdoctoral Fellowship at Northwestern University in 2006 under the direction of Prof. Randall Snurr. Her research program focuses on the design, synthesis, and characterization of functional porous materials for use in adsorption applications including CO2 capture and air purification. She has published over 100 peer-reviewed articles and presented dozens of plenary lectures, keynotes, and invited seminars. Prof. Walton currently serves as an Associate Editor for the ACS Journal Industrial & Engineering Chemistry Research, and was the founding Director and Lead PI of Georgia Tech’s DOE Energy Frontier Research Center, UNCAGE-ME. She was recently selected as a member of the 2020 cohort of DARPA’s prestigious Defense Science Study Group. Prof. Walton’s accomplishments have been recognized by many prestigious awards including the AIChE FRI/John G. Kunesh Award for Excellence in Separations Research (2016), the ACS Women Chemists Committee Rising Star Award (2015), the inaugural International Adsorption Society Award for Excellence in Publications by a Young Member of the Society (2013) and the Presidential Early Career Award for Scientists and Engineers (2008).

The Life of Ernest Orlando Lawrence



Ernest Orlando Lawrence's scientific accomplishments and influence on science are unique in his generation and rank among the most outstanding in history. His cyclotron was to nuclear science what Galileo's telescope was to astronomy. A foremost symbol of the rise of indigenous American science in the twentieth century, Lawrence, perhaps more than any other man, brought engineering to the laboratory, to the great benefit of scientific progress. He originated a new pattern of research, of the group type and on the grand scale, which has been emulated the world over. Rarely, if ever, has any person given so many others, in such a small span of years, the opportunity to make careers for themselves in science. Lawrence was a leader in bringing the daring of science to technology, in wedding science to the general welfare, and in integrating science into national policy.

Lawrence was born in Canton, South Dakota on August 8, 1901. He was the son of educated Norwegian immigrants. Lawrence received his B.S. degree from the University of South Dakota and his M.A. in physics from the University of Minnesota. He continued his studies at the University of Chicago for two years, then transferred to Yale, where he received his Ph.D. in 1925. In 1928, Lawrence went to the University of California as an associate professor, and in 1930, at the age of 29, he became the youngest full professor on the Berkeley faculty.

His doctoral thesis was in photoelectricity. Later, he made the most precise determination to that time of the ionization potential of the mercury atom. With J.W. Beams, he devised a method of obtaining time intervals as small as three billionths of a second, and he applied this technique to study the early stages of

electric spark discharge. He originated a new and more precise method for measuring e/m, which was perfected by F.G. Dunnington.

Lawrence had been contemplating the problem of accelerating ions for some time. In 1929, while scanning the literature, he happened upon a sketch in a German publication. Within minutes, he formulated the principles of the cyclotron and the linear accelerator and so set himself upon a course that was to fundamentally influence scientific research and human events. Between the brilliant, simple concept and operating machines lay engineering barriers not previously encountered. Lawrence's willingness to tackle new engineering problems and his success in solving them, as he reached for successively new energy ranges, was a departure in scientific research that is an important part of his contribution. The hard road he chose was recognized when W.D. Coolidge, presenting Lawrence with the National Academy of Sciences' valued Comstock Prize in 1937, said, "Dr. Lawrence envisioned a radically different course ... [which] called for boldness and faith and persistence to a degree rarely matched." By 1936, the scale of research and supporting engineering development was so large that the Radiation Laboratory was created at the University of California. The prototype of the big laboratory had been born.

Lawrence championed interdisciplinary collaboration. He strongly encouraged physicists to work with biologists, and he set up his own radioisotope distribution system, supplying isotopes to hundreds of doctors and numerous institutions in the prewar period. With his brother John, director of the University's medical center, he used the cyclotron to irradiate malignant tissues with neutrons.

In July 1958, Lawrence traveled to Geneva to take part in developing an agreement on means for detecting nuclear weapon tests. In the midst of negotiations, he became ill and was forced to return to Palo Alto, California, where he died on August 27, 1958.

Lawrence received many awards during his lifetime, including the 1939 Nobel Prize in Physics, the Hughes Medal of the Royal Society, the Medal for Merit, the Faraday Medal, the American Cancer Society Medal, the 1957 Enrico Fermi Award, and the first Sylvanus Thayer Award. He was a member of the National Academy of Sciences and the American Philosophical Society and recipient of many honorary degrees and memberships in foreign societies.

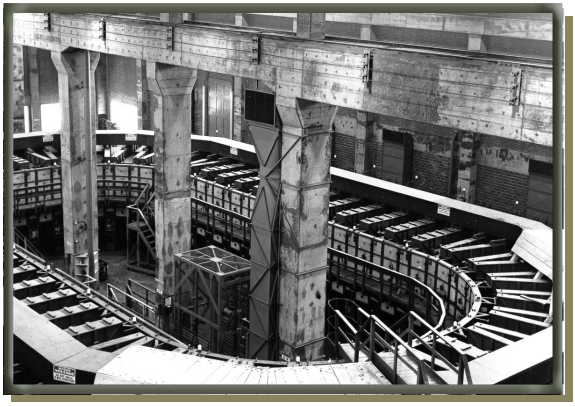
This biography was excerpted from "E. 0. Lawrence: Physicist, Engineer, Statesman of Science," by Glenn T. Seaborg, The Institute of Electrical and Electronics Engineers, Inc., Nuclear and Plasma Science, 5 Society News, June 1992.

The Ernest Orlando Lawrence Award

The Ernest Orlando Lawrence Award was established in 1959 in honor of a scientist who helped elevate American physics to world leadership.

E. O. Lawrence was the inventor of the cyclotron, an accelerator of subatomic particles, an achievement for which he was awarded the 1939 Nobel Prize in Physics. The Radiation Laboratory he developed at Berkeley during the 1930s ushered in the era of "big science," in which experiments were no longer done by an individual researcher and a few assistants on the table-top of an academic lab but by large, multidisciplinary teams of scientists and engineers in entire buildings full of sophisticated equipment and huge scientific machines. During World War II, Lawrence and his accelerators contributed to the Manhattan Project, and he later played a leading role in establishing the U.S. system of national laboratories, two of which (Lawrence Berkeley and Lawrence Livermore) now bear his name.

Shortly after Lawrence's death in August 1958, John A. McCone, Chairman of the Atomic Energy Commission, wrote to President Eisenhower suggesting the establishment of a memorial award in Lawrence's name. President Eisenhower agreed, saying, "Such an award would seem to me to be most fitting, both as a recognition of what he has given to our country and to mankind, and as a means



Alpha Track Calutron at the Y-12 Plant at Oak Ridge, Tennessee from the Manhattan Project, used for uranium enrichment by electromagnetic separation process.

of helping to carry forward his work through inspiring others to dedicate their lives and talents to scientific effort." The first Lawrence Awards were given in 1960.

The Lawrence Award honors scientists and engineers at mid-career (defined as within 20 years of receiving a Ph.D.), showing promise for the future, for exceptional contributions in research and development supporting the Department of Energy and its mission to advance the national, economic, and energy security of the United States.

The Lawrence Award may be awarded in each of the following nine categories: Atomic, Molecular, and Chemical Sciences; Biological and Environmental Sciences; Computer, Information, and Knowledge Sciences; Condensed Matter and Materials Sciences; Energy Science and Innovation; Fusion and Plasma Sciences; High Energy Physics; National Security and Nonproliferation; and Nuclear Physics. The Lawrence Awards are administered by the Department of Energy's Office of Science.

Each Lawrence Award category winner receives a citation signed by the Secretary of Energy, a gold medal bearing the likeness of Ernest Orlando Lawrence, and a $20,000 honorarium; if there are co-winners in a category, the honorarium is shared equally.

The Ernest Orlando Lawrence Award Laureates

2020
Yi Cui
Dana M. Dattelbaum
Dustin H. Froula
M. Zahid Hasan
Daniel Kasen
Robert B. Ross
Susannah G. Tringe
Krista S. Walton

2014
Mei Bai
Carolyn R. Bertozzi
Pavel Bochev
Eric E. Dors
Christopher L. Fryer
David J. Schlegel
Brian D. Wirth
Peidong Yang
Jizhong (Joe) Zhou

2013
Adam P. Arkin
Siegfried H. Glenzer
Stephen C. Myers
John L. Sarrao
John C. Wagner
Margaret S. Wooldridge

2011
Riccardo Betti
Paul C. Canfield
Mark B. Chadwick
David E. Chavez
Amit Goyal
Thomas P. Guilderson
Lois Curfman McInnes

2011
Bernard Matthew Poelker
Barry F. Smith

2009
Joan F. Brennecke
William Dorland
Omar Hurricane
Wim Leemans
Zhi-Xun Shen
Sunney Xie

2006
A. Paul Alivisatos
Malcolm J. Andrews
Moungi G. Bawendi
Arup K. Chakraborty
My Hang V. Huynh
Marc Kamionkowski
John M. Zachara
Steven John Zinkle

2004
Nathaniel J. Fisch
Bette Korber
Claire E. Max
Fred N. Mortensen
Richard J. Saykally
Ivan K. Schuller
Gregory W. Swift

2002
C. Jeffrey Brinker
Claire M. Fraser
Bruce T. Goodwin
Keith O. Hodgson
Saul Perlmutter
Benjamin D. Santer

2002 Paul J. Turinsky

1998 Dan Gabriel Cacuci
Joanna S. Fowler
Laura H. Greene

1998 Steven E. Koonin
Mark H. Thiemens
Ahmed H. Zewail

1996 Charles Roger Alcock
Mina J. Bissell
Thom H. Dunning, Jr.
Charles V. Jakowatz, Jr.
Sunil K. Sinha
Theofanis G. Theofanous
Jorge Luis Valdes

1994 John D. Boice, Jr.
E. Michael Campbell
Gregory J. Kubas
Edward William Larsen
John D. Lindl
Gerard M. Ludtka
George F. Smoot
John E. Till

1993 James G. Anderson
Robert G. Bergman
Alan R. Bishop
Yoon I. Chang
Robert K. Moyzis
John W. Shaner
Carl Wieman

1991 Zachary Fisk
Richard Fortner
Rulon Linford
Peter Schultz
Richard E. Smalley

1991 J. Pace Vandevender

1990 John J. Dorning
James R. Norris
S. Thomas Picraux
Wayne J. Shotts
Maury Tigner
F. Ward Whicker

1988 Mary K. Gaillard
Richard T. Lahey, Jr.
Chain Tsuan Liu
Gene H. McCall
Alexander Pines
Joseph S. Wall

1987 James W. Gordon
Miklos Gyulassy
Sung-Hou Kim
James L. Kinsey
J. Robert Merriman
David E. Moncton

1986 James J. Duderstadt
Helen T. Edwards
Joe W. Gray
C. Bradley Moore
Gustavus J. Simmons
James L. Smith

1985 Anthony P. Malinauskas
William H. Miller
David R. Nygren
Gordon C. Osbourn
Betsy Sutherland
Thomas A. Weaver

1984 Robert W. Conn
John J. Dunn
Peter L. Hagelstein

1984
Siegfried S. Hecker
Robert B. Laughlin
Kenneth N. Raymond

1983
James F. Jackson
Michael E. Phelps
Paul H. Rutherford
Mark S. Wrighton
George B. Zimmerman

1982
George F. Chapline, Jr.
Mitchell J. Feigenbaum
Michael J. Lineberry
Nicholas Turro
Raymond E. Wildung

1981
Martin Blume
Yuan Tseh Lee
Fred R. Mynatt
Paul B. Selby
Lowell L. Wood

1980
Donald W. Barr
B. Grant Logan
Nicholas P. Samios
Benno P. Schoenborn
Charles D. Scott

1977
James D. Bjorken
John L. Emmett
F. William Studier
Gareth Thomas
Dean A. Waters

1976
A. Philip Bray
James W. Cronin
Kaye D. Lathrop
Adolphus L. Lotts
Edwin D. McClanahan

1975
Evan H. Appelman
Charles E. Elderkin
William A. Lokke
Burton Richter
Samuel C. Ting

1974
Joseph Cerny
Harold Paul Fourth
Henry C. Honeck
Charles A. McDonald
Chester R.Richmond

1973
Louis Baker
Seymour Sack
Thomas E. Wainwright
James Robert Weir
Sheldon Wolff

1972
Charles C. Cremer
Sidney D. Drell
Marvin Goldman
David A. Shirley
Paul F. Zweifel

1971
Thomas B. Cook
Robert L. Fleischer
Robert L. Hellens
P. Buford Price
Robert M. Walker

1970
William J. Bair
James W. Cobble
Joseph M. Hendrie
Michael M. May
Andrew M. Sessler

1969
Geoffrey F. Chew
Don T. Cromer
Ely M. Gelbard
F. Newton Hayes

1969 John H. Nuckolls

1968 James R. Arnold
E. Richard Cohen
Val L. Fitch
Richard Latter
John B. Storer

1967 Mortimer M. Elkind
John M. Googin
Allen F. Henry
John O. Rasmussen
Robert N. Thorn

1966 Howard M. Agnew
Ernest C. Anderson
Murray Gell-Mann
John R. Huizenga
Paul R. Vanstrum

1965 George A. Cowan
Floyd M. Culler
Milton C. Edlund
Theodore B. Taylor
Arthur C. Upton

1964 Jacob Bigeleisen
Albert L. Latter
Harvey M. Pratt
Marshall N. Rosenbuth
Theos J. Thompson

1963 Herbert J.C. Kouts
L. James Rainwater
Louis Rosen
James M. Taub
Cornelius A. Tobias

1962 Andrew A. Benson
Richard P. Feynman

1962 Herbert Goldstein
Anthony L. Turkevich
Herbert F. York

1961 Leo Brewer
Henry Hurwitz, Jr.
Conrad L. Longmire
Wolfgang K. H. Panofsky
Kenneth E. Wilzbach

1960 Harvey Brooks
John S. Foster, Jr.
Isadore Perlman
Norman F. Ramsey, Jr.
Alvin M. Weinberg

No individual is alone responsible for a single stepping stone along the path of progress, and where the path is smooth progress is most rapid.

-Ernest Orlando Lawrence