

THE DEPARTMENT OF ENERGY

Office of Public Affairs

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Thirteen Department of Energy-Funded Researchers Honored with the Presidential Early Career Awards for Scientists and Engineers

WASHINGTON – President Obama named 13 U.S. Department of Energy-funded researchers as [recipients of the Presidential Early Career Award for Scientists and Engineers \(PECASE\)](#). This is the highest honor bestowed by the U.S. government on outstanding scientists and engineers, who are early in their independent research careers. The Department awardees are being recognized for their efforts in a variety of fields – from advances in power electronics for the electric grid to innovations in scientific computation to new physics developments. The Energy Department nominated the awardees and a variety of the Department’s program offices are funding their work.

“Discoveries in science and technology not only strengthen our economy, they inspire us as a people.” President Obama said. “The impressive accomplishments of today’s awardees so early in their careers promise even greater advances in the years ahead.”

“I congratulate these award-winning young researchers and encourage them to continue on their paths to becoming the next generation of innovators, who will help America stay competitive in a rapidly advancing world,” said Energy Secretary Steven Chu. “Their cutting-edge research is helping to meet our energy challenges, strengthen our national security and enhance our economic competitiveness.”

The winning Energy Department scientists are among 96 researchers supported by 11 federal departments and agencies who will receive the PECASE. In addition to a citation and a plaque, each PECASE winner is continuing to receive Department funding for up to five years to advance his or her research.

The winning Department of Energy and National Nuclear Security Administration funded researchers are:

- **Dr. Stanley Atcitty, Sandia National Laboratories, nominated by the Office of Electricity Delivery and Energy Reliability**
 - For advances in power electronics for the electric grid including the development of a high-temperature silicon-carbide power module and an ultra-high-voltage silicon-carbide thyristor, for research on grid integration of energy storage, and for mentorship in the Native American community.
- **Dr. Jeffrey W. Banks, Lawrence Livermore National Laboratory, nominated by the National Nuclear Security Administration, Office of Defense Programs**
 - For work in computational physics, scientific computation, and numerical analysis, especially pioneering contributions in numerical approximations to hyperbolic partial differential equations focusing on the development and analysis of nonlinear and high-resolution finite-volume and finite-difference methods, and for service in high schools and the scientific community.
- **Dr. Amy J. Clarke, Los Alamos National Laboratory, nominated by the National Nuclear Security Administration, Office of Defense Programs**

- For research on uranium niobium alloy deformation mechanisms using micro-pillar compression testing to determine the influence of orientation on stress-strain response, for using in-situ solidification and proton radiography with potential to finally resolve liquid-solid processing questions relevant to nuclear weapons, and for mentoring future ferrous metallurgists.
- **Mr. Derek R. Gaston, Idaho National Laboratory, nominated by the Office of Nuclear Energy**
 - For the development of a multi-physics simulation framework that enables the rapid creation of fast engineering simulation tools, for the application of this framework to the understanding of accident-tolerant and novel nuclear fuels, and for service to the scientific community.
- **Dr. Christopher Hirata, California Institute of Technology, nominated by the Office of Science**
 - For innovative work reducing astrophysical uncertainties that limit the extraction of fundamental physics parameters from cosmological observations, for studies of the sensitivity of structure formation to the relative velocity between dark matter and baryons in the early universe, and for service on NASA/DOE Joint Dark Energy Mission working groups.
- **Dr. Heileen Hsu-Kim, Duke University, nominated by the Office of Science**
 - For leading nanogeochemistry research to understand toxin subsurface transport establishing a new geochemical framework for predicting mercury methylation potential in contaminated sediments and for leadership in publishing and collaboration with synchrotron scientists in the United States and Europe.
- **Dr. Thomas Francisco Jaramillo, Stanford University, nominated by the Office of Energy Efficiency and Renewable Energy**
 - For innovations in solar hydrogen production, including using quantum confinement in molybdenum-disulfide nanoparticles to enhance catalytic reactivity, for incorporating these catalysts into high-surface-area scaffolds, and for excellence in mentoring at the university level.
- **Dr. Pablo Jarillo-Herrero, Massachusetts Institute of Technology, nominated by the Office of Science**
 - For pioneering research on quantum transport phenomena in graphene and topological insulators, which has expanded understanding of the fundamental electronic structure and laid a foundation for future energy applications, and outreach to the public through the popular press.
- **Dr. John R. Kitchin, Carnegie Mellon University, nominated by the Office of Fossil Energy**
 - For advances in electrochemical separations for carbon capture including the demonstration of alkaline ion exchange membranes for oxygen separation, for fundamental advances in computational simulation of metal catalyst reactivity, and for excellence in teaching, student mentoring, and introduction of computing into the engineering curriculum.
- **Dr. Peter Mueller, Argonne National Laboratory, nominated by the Office of Science**
 - For scientific leadership in developing precision laser spectroscopy and atom trapping techniques resulting in groundbreaking insights on the charge radii of exotic light nuclei and the fundamental nature of the weak interaction via precise measurement of nuclear beta decay.
- **Dr. Daniel B. Sinars, Sandia National Laboratories, nominated by the Office of Science**
 - For developing innovative techniques to study the properties of instabilities in magnetized-high-energy-density plasma, enabling quantifiable comparison between experiment and simulation needed for validating cutting-edge radiation-hydrodynamics codes, and for demonstrating substantial leadership qualities in high-energy-density-laboratory-plasma physics.
- **Dr. Jesse Thaler, Massachusetts Institute of Technology, nominated by the Office of Science**
 - For innovative work exploring possible new physics beyond the Standard Model, for development of improved techniques for distinguishing events at the Large Hadron Collider involving new physics from those due to known interactions, and for developing tools that

have helped train aspiring particle phenomenologists confronting the challenges of collider data.

- **Dr. Heather Whitley, Lawrence Livermore National Laboratory, nominated by the National Nuclear Security Administration, Office of Defense Programs**
 - For using path-integral Monte Carlo techniques to produce very accurate quantum statistical potentials for use in molecular dynamic codes, for applying these methods to first-principles understanding of thermal conductivity in ignition capsules for the National Ignition Facility, and for service to the laboratory Postdoctoral Association.

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