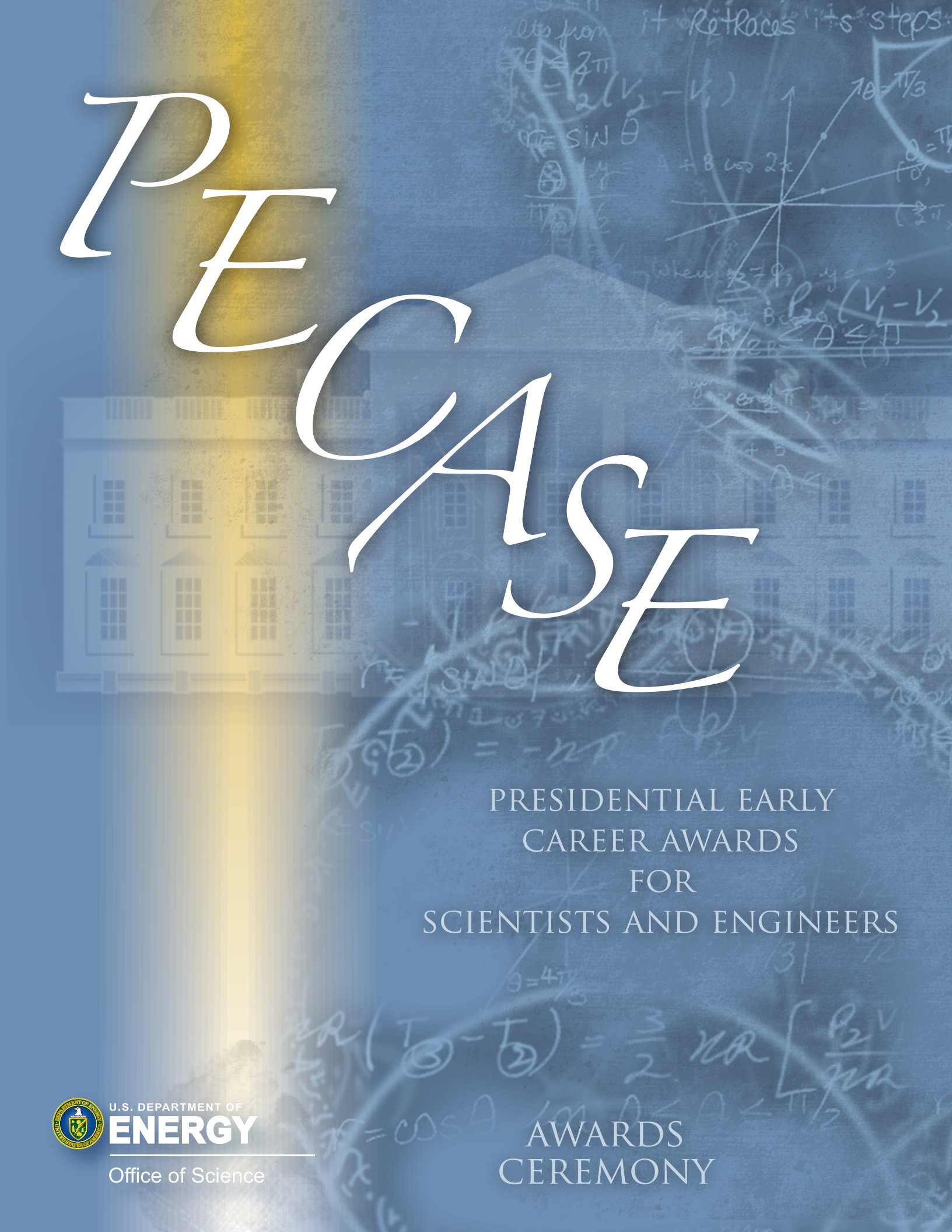


PECASE

PRESIDENTIAL EARLY CAREER AWARDS FOR SCIENTISTS AND ENGINEERS

U.S. DEPARTMENT OF ENERGY

Office of Science

AWARDS CEREMONY

AGENDA

Welcome

Opening Remarks

Remarks on the PECASE Awards

Presentation of the Awards

Closing Remarks

Group Photo

Reception Immediately Following

PECASE

The Presidential Early Career Award for Scientists and Engineers

In 1996, the National Science and Technology Council (NSTC) was commissioned to create an award to recognize and honor outstanding scientists and engineers at the outset of their independent research careers. The NSTC was established to coordinate the multiagency science and technology policy-making process, and to implement and integrate the President's science and technology policy agenda across the federal government.

The Presidential Early Career Award for Scientists and Engineers (PECASE) embodies the high priority placed by the government on maintaining the leadership position of the United States in science by producing outstanding scientists and engineers and nurturing their continued development. The Awards identify a cadre of outstanding scientists and engineers who will broadly advance science and the missions important to the participating agencies.

The PECASE Awards are intended to recognize some of the finest scientists and engineers who, while early in their research careers, show exceptional potential for leadership at the frontiers of scientific knowledge during the twenty-first century. The Awards foster innovative and far-reaching developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of participating agencies, enhance connections between fundamental research and national goals, and highlight the importance of science and technology for the nation's future.

The PECASE Award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. The awards are conferred annually at the White House following recommendations from participating agencies. To be eligible for a PECASE Award, an individual must be a U.S. citizen, national, or permanent resident. Each PECASE Award will be of five years duration. Individuals can receive only one PECASE award in their careers.

AWARDEES

Office of Science

Dr. Milind Kulkarni
Purdue University

Dr. Keji Lai
University of Texas, Austin

Dr. Michelle A. O'Malley
University of California, Santa Barbara

Dr. Matthias R. Schindler
University of South Carolina

Dr. JonathoN Simon
University of Chicago

Dr. William A. Tisdale
Massachusetts Institute of Technology

National Nuclear Security Administration

Dr. Jonathan B. Hopkins
University of California, Los Angeles

Dr. Tammy Ma
Lawrence Livermore National Laboratory

Dr. David D. L. Mascareñas
Los Alamos National Laboratory

Office of Electricity Delivery and Energy Reliability

Dr. Michael Stadler
Lawrence Berkeley National Laboratory

Office of Energy Efficiency and Renewable Energy

Dr. Tonio Buonassisi
Massachusetts Institute of Technology

Office of Fossil Energy

Dr. Paul R. Ohodnicki, Jr.
National Energy Technology Laboratory

Office of Nuclear Energy

Dr. Melissa C. Teague
Sandia National Laboratories

Dr. Tonio Buonassisi

Massachusetts Institute of Technology

Office of Energy Efficiency and Renewable Energy

For leadership and demonstration of exceptional promise in research at the forefront of the photovoltaics field, including defect engineering in multi-crystalline silicon solar cells and emerging photovoltaic absorbers, as well as his impact on the commercialization of photovoltaic technology.

Dr. Tonio Buonassisi is an Associate Professor of Mechanical Engineering at the Massachusetts Institute of Technology. He heads the MIT PVLab, a research laboratory with an interdisciplinary focus on photovoltaics and system design. His research interests include the design of innovative manufacturing processes, predictive manufacturing process simulation, multiscale defect characterization, solar-to-fuels, solar-powered information systems, and technoeconomic analysis. Working in collaboration with over two dozen solar-energy companies, he contributed to the development of processes, equipment, and products in commercial production today. His graduate research (University of California, Berkeley; advised by Eicke R. Weber) contributed to the founding patent of Calisolar, now Silicor Materials. He co-founded the Fraunhofer Center for Sustainable Energy Systems in Boston. The PVLab has a strong focus on education and community building; as of March 2016, his online course "Fundamentals of Photovoltaics" received over 110,000 unique visits on MIT OpenCourseware, and videos in iTunes U were downloaded over 24,000 times. He has co-authored 130 peer-reviewed journal articles on solar energy.

Dr. Jonathan B. Hopkins

University of California, Los Angeles

National Nuclear Security Administration

For work in design and fabrication of a new class of micro-engineered materials with novel properties including micro-scale material architectures that achieve targeted thermo-mechanical properties such as a zero or negative coefficients of thermal expansion.

Dr. Hopkins is an Assistant Professor at the University of California, Los Angeles where his group specializes in flexible/compliant systems. His group's efforts are divided into three primary thrusts: (i) the creation of novel synthesis tools for guiding designers in determining the optimal number, type, location, and orientation of constituent flexible elements within the topologies of compliant systems, (ii) the development of advanced optimization methods for rapidly determining the geometric parameters and material properties of these constituent elements such that their resulting compliant systems best achieve their desired functional requirements, and (iii) the creation of new additive fabrication approaches for enabling the realization of complex compliant systems made of multi-materials with submicron-sized, overhanging, true-3D features that span large volumes.

Areas of application for Dr. Hopkins' research group include but are not limited to microarchitectured materials that achieve naturally unobtainable properties, microelectromechanical systems (MEMS) such as high-speed, large range micro-mirror arrays, precision flexure systems that achieve sub-nanometer resolution and repeatability, soft robots that interact with humans in an adaptable and safe way, and compliant medical devices such as disposable endoscopic surgical tools that achieve high dexterity within the body. His group is also pursuing an additive fabrication approach that utilizes holographic optical tweezers to simultaneously pick, place, and join large numbers of nanoparticles to construct complex compliant systems.

Dr. Hopkins was born in New York City. He received his Bachelor's, Master's, and Ph.D. degrees all in Mechanical Engineering at the Massachusetts Institute of Technology. He was a postdoctoral researcher at Lawrence Livermore National Laboratory before joining the faculty of the Mechanical and Aerospace Engineering Department at the University of California, Los Angeles.

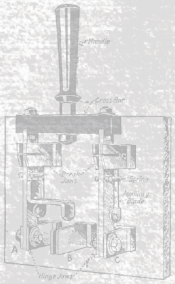


FIG. 117.—A field discharge switch. *A* and *C* connect to field-winding terminals and *B* connects to one end of the field discharge resistance.

Dr. Milind Kulkarni

Purdue University

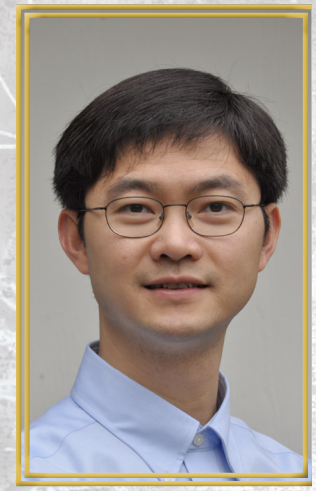
Office of Science

For highly innovative research on new computational algorithms that enable efficient parallel compilers and runtimes for mission critical applications that are based on massively irregular data sets, and for his exceptional scientific leadership.

Milind Kulkarni is an Associate Professor in the School of Electrical and Computer Engineering at Purdue University. He was nominated by the Advanced Scientific Computing Research Program in the DOE Office of Science for his work on developing the language abstractions, compiler transformations, and runtime systems that are necessary to unlock the performance of simulation, data mining, and analysis applications and execute them efficiently on complex, large-scale systems.

Milind's work targets irregular applications: those that have complex, input-dependent behaviors that are hard for traditional compilers to analyze and optimize. His work focuses on developing abstractions that allow these applications to be understood according to their high-level behavior, hiding their complexity from compilers and runtime systems. His research has pioneered analyses and transformations that allow the kinds of irregular applications that arise in simulation and data mining to be optimized for better performance through increased locality, adapted to high performance hardware such as GPUs and vector units, and mapped to large-scale distributed systems.

Milind received BS degrees in Computer Science and Computer Engineering from North Carolina State University in 2002. He then pursued his Ph.D. at Cornell University, where he was supported by a Department of Energy High Performance Computer Science Fellowship. His Ph.D. research focused on parallelizing irregular, graph-based applications. After receiving his Ph.D. in 2008, he was a postdoctoral researcher at the Institute for Computational Engineering and Sciences at the University of Texas at Austin. In 2009, he joined Purdue University, where he has remained. He is the recipient of numerous teaching awards, as well as a National Science Foundation CAREER award and a Department of Energy Early Career Award.



DR. KEJI LAI

UNIVERSITY OF TEXAS, AUSTIN

OFFICE OF SCIENCE

For innovative work in the development of microwave impedance microscopy to explore the microscopic nature of electrostatic field effects in advanced materials, and for leadership in promulgating the applied technology aspects of the technique.

Dr. Keji Lai is an Assistant Professor in the Physics Department at the University of Texas at Austin and was nominated by the Electron and Scanning Probe Microscopies program of the Basic Energy Sciences division of the DOE Office of Science. Dr. Lai has made significant contributions to the development of scanning microwave impedance microscopy, an innovative technique that enables the spatially resolved study of electronic properties in novel materials and devices for basic energy research. His work has led to the direct observation of electronic inhomogeneity in phase change materials and strongly correlated oxides and the quantitative imaging of edge states in various two-dimensional electron systems, which greatly advanced our understanding of the electronic structures and dynamics at the mesoscopic length scale.

Dr. Lai's research group at UT-Austin continues to explore broadband impedance microscopy, local photoconductivity imaging, and nanoscale nonlinear imaging. These technological advances have found immediate applications in the investigation of domain walls and grain boundaries in complex systems, the degradation process of nanoelectronic and optoelectronic devices, and the local ionic and electronic motion in battery materials. In addition to scientific research, Dr. Lai has been actively engaged in undergraduate teaching, as well as public lecturing to high school teachers and middle school summer camps.

Dr. Lai received his undergraduate degree from Tsinghua University, China, and Ph.D. from Princeton University, both in Electrical Engineering. He was the Karel Urbanek Postdoctoral Fellow and the King Abdullah University of Science and Technology Global Research Partnership Postdoctoral Scholar at the Applied Physics Department at Stanford University. After joining UT-Austin in 2012, he was awarded the DOE Early Career Award (2013) and the 2015 International Union of Pure and Applied Physics (IUPAP) Young Scientist Prize in Structure and Dynamics of Condensed Matter.

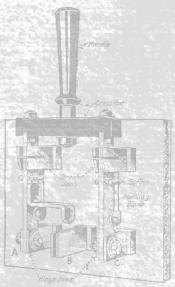


FIG. 117.—A field discharge switch. *A* and *C* connect to field-winding terminals and *B* connects to one end of the field discharge resistance.

Dr. Tammy Ma

National Nuclear Security Administration

Lawrence Livermore National Laboratory

For innovation and leadership in quantifying hydrodynamic instability and mix in Inertial Confinement Fusion (ICF) implosion experiments at the National Ignition Facility and for key contributions to experiments demonstrating the highest ICF neutron yield and laboratory confinement parameters achieved to date..

Dr. Tammy Ma is an experimental physicist in inertial confinement fusion and high energy density (HED) physics at the National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory. Dr. Ma leads a large number of the fusion experiments at the NIF, the world's largest, most energetic laser. She also currently heads the X-Ray Analysis Group for the Inertial Confinement Fusion (ICF) program.

Dr. Ma was responsible for developing an x-ray imaging diagnostic for the NIF and established a methodology for determining hydrodynamic instability mix and pressure in NIF implosions. These measurements led to detailed understanding of the performance of highly compressed implosions and motivated new experimental designs that have since led to record neutron yields — a key metric of ICF performance. For this work, she received the 2014 Director's Excellence in Publications Award: Best Publication in Applied Science as it was "judged to have an especially significant impact on the external scientific and technical community or important Laboratory missions." To date, Dr. Ma has authored or co-authored over 110 refereed scientific publications. She is also the recipient of a 2013 Defense Programs Award for significant contributions to the Stockpile Stewardship Program and numerous Directorate Performance Awards.

Tammy is strongly committed to education and scientific outreach. She has coordinated the NIF/HED summer scholars program for many years now and continues to volunteer at outreach events and science fairs. Most recently, she gave a series of public lectures for LLNL's popular "Science on Saturday" program.

Dr. Ma earned her B.S. degree in Aerospace Engineering from Caltech in 2005, and received her M.S. in 2008 and Ph.D. in 2010, both from the University of California, San Diego. She completed a postdoc at LLNL before becoming a staff scientist in 2012.

Dr. David D. L. Mascareñas

National Nuclear Security Administration

Los Alamos National Laboratory

For innovative and multidisciplinary research and development of cyber-physical systems, haptic human-computer interfaces for structural damage detection, excellent mentorship and commitment to scientific outreach through development of the Los Alamos National Laboratory Science of Signatures Advanced Study Institute.

Dr. David D. L. Mascareñas earned his Ph.D. and M.S. in structural engineering at the University of California San Diego, in La Jolla, California in 2008 and 2006 respectively. He received the B.S. in mechanical engineering at Colorado State University in Fort Collins, Colorado. in 2004. He worked as a laboratory manager at SAIC/Sullivan International in 2009 to develop systems health monitoring software for ground-based robots. In 2010 he was a Director's funded postdoctoral researcher at Los Alamos National Laboratory. During his time as a postdoc, David focused on developing tools and techniques for ensuring the cyber-physical security of unattended robots. Specifically, he developed control software that would allow a driverless car to perform the Precision Immobilization Technique (a.k.a. PIT maneuver). He also investigated the use of info-gap decision theory to help unattended robots operate in adversarial environments. In 2012 he was converted to a technical staff member at the Los Alamos National Laboratory where he currently performs research on cyber-physical systems at the Engineering Institute. He currently performs research on the application of compressive sensing techniques to structural health monitoring, the deployment of wireless sensor networks, remotely-readable tamper-evident seals, aerial robotics for the deployment of wireless sensor networks, human-machine interfaces for ensuring the criticality safety of technicians working in gloveboxes, standoff experimental mechanics, artificial personality synthesis based on the Jungian model of personality, and the development of techniques to interface humans to data using vibro-tactile interfaces. In addition, David is a deputy director of the Los Alamos National Laboratory Engineering Institute. In this role he helps run the Los Alamos Dynamic Summer School which involves mentoring undergraduate and graduate students. David is also the primary architect of the Los Alamos National Laboratory Advanced Studies Institute, a professional development program for Ph.D. students and postdocs. Going forward, David is particularly interested in developing computational tools to help augment human creativity and to further the development of his artificial personality synthesis framework.

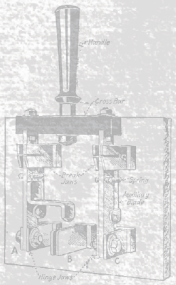


FIG. 117.—A field discharge switch. (*A* and *C* connect to field-winding terminals and *B* connects to one end of the field discharge resistance.)

Dr. Paul R. Ohodnicki, Jr.

National Energy Technology Laboratory (NETL)

Office of Fossil Energy

For outstanding scientific leadership in the discovery and development of new materials that enable advanced energy systems, and for demonstrated excellence in educational outreach, mentorship, and research collaboration. .

Dr. Ohodnicki is a member of the Functional Materials Team in NETL's Research & Innovation Center, where he leads research efforts to discover and develop novel high-performance materials for application in process monitoring and control for advanced energy systems. His research collaborations have resulted in the development of a portfolio of patented and patent-pending technologies. Beyond technology innovation, his highly cited research has also made significant contributions to the materials science community.

In addition to his research on materials for sensing applications and optical sensors, Dr. Ohodnicki is the principal investigator of a $4.5 million, multiyear project that spans materials discovery and development to full-scale system analysis and demonstration of new power electronics for grid integration of solar and energy-storage technologies. The project, funded by the U.S. Department of Energy's Solar Energy Technology Office, is a direct result of Dr. Ohodnicki's long-standing collaborations with co-principal investigator Professor Michael McHenry from Carnegie Mellon University. Dr. Ohodnicki's research successes demonstrate an ability to further foundational materials understanding and engineer real-world materials solutions to address our nation's energy challenges.

Before joining NETL, Dr. Ohodnicki worked as an R&D engineer at PPG Industries, developing silver-based reflectors for concentrating solar power applications and low-emissivity coatings for energy-efficient windows. He made significant contributions to the successful commercialization of a new low-emissivity window coating now referred to as Solarban R100, a materials innovation that has created substantial new intellectual property for PPG Industries.
Dr. Ohodnicki is involved in science outreach and education as a Science and Engineering Ambassador for the National Academy of Sciences and as a mentor to post-doctoral and graduate students. He has taught graduate-level courses at Carnegie Mellon University and the University of Pittsburgh and has an adjunct affiliation in the Department of Materials Science and Engineering at Carnegie Mellon University. Dr. Ohodnicki is also an active member of numerous scientific societies, where he has held a variety of leadership roles, including serving as chair of the Energy Conversion and Storage Committee of The Minerals, Metals, and Materials Society.
Dr. Ohodnicki received his Bachelor's degrees in engineering physics and economics from the University of Pittsburgh and his Master's and doctorate degrees in materials science and engineering from Carnegie Mellon University. Dr. Ohodnicki and his family reside in Hampton Township, Pennsylvania.

Dr. Michelle A. O'Malley

University of California, Santa Barbara

Office of Science

For innovative research on lignocellulose-degradation by anaerobic fungal species with application to biofuels production from plant biomass, for development of a genetic system for anaerobic fungi enabling bioengineering approaches to biofuels production, and for teaching and leadership activities in scientific societies.

Dr. Michelle Ann O'Malley is an Assistant Professor in the Department of Chemical Engineering at the University of California, Santa Barbara. Her research develops new technologies to genetically engineer non-model microbes and microbial consortia for sustainable fuel and chemical production. She was nominated by the Biological and Environmental Research (BER) Division within the DOE Office of Science.

A goal of Dr. O'Malley's research is to engineer anaerobic fungi as platform organisms to convert plant waste into fermentable sugars. Anaerobic fungi are native to the gut and rumen of large herbivores, where they have evolved unique abilities to break down lignocellulosic biomass through invasive growth and the secretion of powerful enzymes. Dr. O'Malley's group isolates novel strains of fungi from the environment, and leverages genomic sequencing to characterize their function and identify new enzymes that deconstruct biomass. More recent research in Dr. O'Malley's laboratory has focused on building anaerobic consortia for compartmentalized biomass hydrolysis and fuel production.

Dr. O'Malley was born and raised in Cleveland, Ohio. She earned a B.S. in Chemical Engineering and Biomedical Engineering from Carnegie Mellon University in 2004, and a Ph.D. in Chemical Engineering from the University of Delaware in 2009. She was a postdoctoral fellow in the Department of Biology at MIT before joining UCSB in 2012. Dr. O'Malley was named one of the 35 Innovators Under 35 by MIT Technology Review in 2015, the Alan P. Colburn Memorial Lecturer at the University of Delaware in 2016, and is the recipient of a DOE Early Career Award, an NSF CAREER award, and a Hellman Faculty Fellowship.

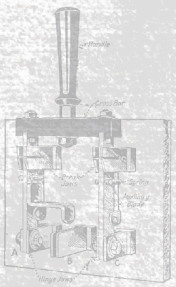


FIG. 117.—A field discharge switch. *A* and *C* connect to field winding terminals and *B* connects to one end of the field discharge resistance.

Dr. Matthias R. Schindler

University of South Carolina

Office of Science

For innovative theoretical research to establish a systematic framework for the description of parity violation in few-nucleon systems, for calculating reliable and testable relations between observables in light nuclei, and for scientific leadership in the area of parity violation.

Dr. Schindler is an assistant professor in the Department of Physics and Astronomy at the University of South Carolina. His research in theoretical nuclear physics focuses on fundamental symmetries, in particular parity invariance, in the interactions in few-nucleon systems.

An improved understanding of how the interactions among protons and neutrons can be connected to the underlying theory of quantum chromodynamics is one of the main objectives of nuclear physics. Dr. Schindler's research uses miniscule deviations from parity invariance as a unique probe of how quarks and gluons are confined in nucleons. Using effective field theory methods, Dr. Schindler is performing a systematic and model-independent study of a variety of processes involving few-nucleon systems to improve our understanding of hadronic parity violation. This work is closely related to experimental efforts at the Spallation Neutron Source at Oak Ridge National Laboratory and the National Institute of Standards and Technology.

Dr. Schindler received his Ph.D. in physics from the Johannes Gutenberg University of Mainz, Germany, in 2007. During his studies he also spent time at the University of Washington in Seattle, Washington, the European Centre for Theoretical Studies in Nuclear Physics and Related Areas in Trento, Italy, and at TRIUMF in Vancouver, Canada. Before joining the faculty at the University of South Carolina in 2011, Dr. Schindler was a postdoctoral researcher at Ohio University and The George Washington University. He is a member of the executive committee of the American Physical Society Topical Group on Few-Body Systems and Multiparticle Dynamics and has co-authored a graduate-level textbook on chiral perturbation theory.

Dr. Jonathan Simon
University of Chicago

Office of Science

For pioneering research at the intersection of atomic, molecular, and optical sciences and condensed matter physics, including the investigation of highly controllable atomic-optical systems as quantum simulators for electronic condensed matter systems and with possible implications for quantum computation.

Dr. Simon is an experimental physicist working at the emerging interface between condensed matter physics, atomic physics, and quantum information science. The connection between these fields arises because cutting edge materials like high-temperature superconductors and fractional quantum Hall fluids rely on the intricate entanglement of many electrons, a phenomenon which is poorly understood. Synthetic, custom-built materials provide a controlled environment to explore the conditions under which such entanglement occurs, and its impact on material properties. Dr. Simon's research focuses on creating synthetic materials where the electrons are emulated either by ultracold atoms, or most recently, by light. Exploiting these analogies has enabled him to create blown-up materials, where the one can study, particle-by-particle, the role of quantum fluctuations in driving magnetic phase transitions, and the formation of topological phases of matter.

Dr. Simon is an Assistant Professor of physics at the University of Chicago. He was born and raised in the DC area, and conducted his undergraduate studies at the California Institute of Technology. He was a doctoral student at the Harvard/MIT Center for Ultracold Atoms, where he conducted research on quantum information processing with atomic ensembles in optical resonators, earning his Ph.D. in 2010. He was subsequently a postdoctoral researcher at Harvard University, where he explored quantum phases of ultracold matter with atom-resolved microscopy techniques. Since joining the faculty of the University of Chicago in 2012, his group has focused on creating and exploring photonic matter. He is the recipient of a DOE Early Career Award (2013), the DARPA Young Faculty Award (2013), and a member of the AFOSR Young Investigator Program (2013).

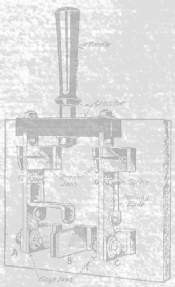


FIG. 117.—A field discharge switch. *A* and *C* connect to field-winding terminals and *B* connects to one end of the field discharge resistance.

Dr. Michael Stadler

Lawrence Berkeley National Laboratory

Grid Integration Group and Microgrid R&D

For serving as lead developer of the DOE-funded microgrid modeling tool, Distributed Energy Resources Customer Adoption Model, available in 12 different versions with more than 350 worldwide users registered for academic microgrid and smart grid research usage.

Dr. Michael Stadler is a Staff Scientist at Berkeley Lab, California where he leads the Grid Integration Group, which includes the microgrid team and development of the Distributed Energy Resources Customer Adoption Model (DER-CAM).

Michael studied at Vienna University of Technology, from which he holds a Master's degree in electrical engineering and a Ph.D. summa cum laude in energy economics. In his career to date, he has published more than 200 papers, journal papers, and reports, as well as developed seven software tools related to the integration of renewable energy into the grid. His group supports enhancements to DER-CAM, which is used for microgrid design as well as for supervisory microgrid controller functions. He also advises the Department of Defense on microgrid design and works with the U.S. Army Garrison Fort Hunter Liggett on implementing a multi-level microgrid controller based on DER-CAM. The functions of this controller are made available to IEEE SA standards development working groups.

DER-CAM is a flexible decision support tool for decentralized energy systems. Two major versions of this tool are available The first, Investment & Planning DER-CAM determines the optimal investment portfolio of Distributed Energy Resources (DERs) based on their cost and performance characteristics, tariffs, and historic/simulated hourly load and PV generation data from a given building, campus, or microgrid. This version is mostly used for microgrid design. The second, Operations DER-CAM, provides detailed optimized operation schedules for existing DERs in a building or microgrid, on a week-ahead basis, using forecasted loads and weather data. Operations DER-CAM is capable of running in 1-hour, 15-min, 5-min, or 1-min time steps and is mostly used for microgrid controllers.

Michael's work with microgrid modeling tools and controllers has contributed to the successful integration of renewables into the grid while sustaining reliability and resilience.

Dr. Melissa C. Teague

Sandia National Laboratories

Office of Nuclear Energy

For pioneering the first application of advanced microstructural instrumentation to high burnup mixed oxide fuel, for preparing successive thin sections using a focused ion beam, characterizing each section using EBSD and EDS, and reconstructing the three dimensional original sample..

Melissa Teague is currently a staff scientist at Sandia National Laboratories utilizing her diverse background to study a diverse range of material challenges in primarily brittle materials. She is the Principal Investigator (PI) on a project to link the microstructural features in brittle materials with microstructural level stresses and validating with innovative experimental techniques. Prior to coming to Sandia in 2015, Melissa was a staff scientist at Idaho National Laboratory studying the microstructure property relationships in a variety of nuclear fuels (oxide, metallic, silicide) before and after irradiation. She developed pioneering methods for employing new characterization technologies to challenging materials. Additionally, she collaborates closely with the materials modeling community to develop experiments for validation of models, as well as utilizing models for improved experiment design.

Melissa moved multiple times during her upbringing due to her father's Army career, settling in Columbia, Missouri for high school. Mr. Brooks, her amazing high school chemistry teacher, helped to spark her love for science. Melissa then received her BS (2006) and MS (2008) from Missouri University of Science and Technology. She earned her Ph.D. in Material Science from Colorado School of Mines in 2013 while working full time at Idaho National Laboratory. In addition to research she also is the mother to three young children (Mackenzie (4), Blake (1), and Toby (1)), and hopes to serve as a role model to young women in engineering, showing that having a family and a successful research career are not mutually exclusive.

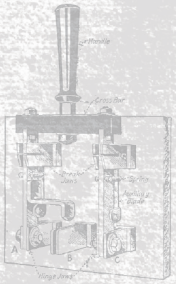


FIG. 117.—A field discharge switch. *A* and *C* connect to field-winding terminals and *B* connects to one end of the field discharge resistance.

Dr. William A. Tisdale

Massachusetts Institute of Technology

Office of Science

For developing novel methodology to visualize ultrafast electronic processes at interfaces and for conceptualizing its use in understanding ensemble behavior in photovoltaic, electrochemical, and optoelectronic systems.

Will Tisdale is an Assistant Professor in the Department of Chemical Engineering at MIT, where he is currently the Charles & Hilda Roddey Career Development Professor. His research program is focused on the discovery and development of nanoscale semiconductor materials for next-generation optoelectronic technologies, including solar cells and high-efficiency lighting & displays. Through the use of time-resolved laser spectroscopy and optical microscopy methods, his group is working to advance our understanding of electronic, excitonic, and vibrational dynamics at the nanoscale. He has made contributions to the synthesis and self-assembly of colloidal quantum dots, and to our understanding of charge and exciton transport in these materials. More recently, he has developed an interest in the production and characterization of two-dimensional semiconductor nanomaterials, including atomically-thin transition metal dichalcogenides such as MoS2 and WSe2, and organohalide perovskite nanoplatelets.

Will earned a B.E. in Chemical Engineering from the University of Delaware in 2005, a Ph.D. in Chemical Engineering from the University of Minnesota in 2010, and was a postdoc in the Research Laboratory of Electronics at MIT before joining the faculty in 2012. He is a recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE), the DOE Early Career Award, the NSF CAREER Award, an Alfred P. Sloan Fellowship, and MIT's Everett Moore Baker Award for Excellence in Undergraduate Teaching.

U.S. Department of Energy Early Career Award for Scientists and Engineers Recipients by Year

Office of Science Recipients	Office of Defense Programs Recipients
1996	
Michael Smith	Shenda M. Baker
John P. Hill	Richard A. Cairncross
Philip M. Jardine	
Christine Hartmann	
1997	
Andrew Brandt	Bruno S. Bauer
David J. Dean	Thomas J. Matula
Lori A. Freitag	
David E. Newman	
John Shanklin	
1998	
Mari Lou Balmer	Tonya L. Kuhl
James W. Lee	Roya Maboudian
Anthony Mezzacappa	Christopher Palmer
Gary P. Wiederrecht	
1999	
Kenneth M. Kemner	Ken R. Czerwinski
John F. Mitchell	David M. Ford
Lynne E. Parker	
Xian Chen	
2000	
Richard B. Lehoucq_	Aaron L. Odom
Zhihongb Lin	Jonas C. Peters
Zheng-Tian Lu	
Andrey Zheludev	
2001	
Ian Anderson	Kenneth A. Gall
Vincent Cianciolo	Paul Ricker
Mark Herrmann	Z. John Zhang
Jizhong Zhou	
2002	
Jeffrey C. Blackmon	Carl Boehlert
Edmond Chow	Krishnakumar Garikipati
Sergei Maslov	
Jonathan E. Menard	
Christine Orme	
2003	
Tamara G. Kolda	Catherine M. Snelson
Saskia Mioduszewski	Donald P. Visco, Jr.
Margaret S. Torn	Brian D. Wirth
Jian Shen	

U.S. Department of Energy Early Career Award for Scientists and Engineers Recipients by Year

Office of Science Recipients	Office of Defense Programs Recipients
2004	
John Arrington	Wei Cai
William Ashmanskas	William P. King
Hong Qin	Yunfeng Lu
Robert B. Ross	
Paul Vaska	
Zhan	
Zhangbu Xu	
2005	
Daniel Bardayan	Christopher J. Roy
Todd Munson	Wendelin Wright
Wynne Schiffer	Michael A. Zingale
Yanwen Zhang	
2006	
Kyle Cranmer	Brian J. Kirby
Julia Laskin	Jeffrey Kysar
Ho Nyung Lee	Shawn Newsam
Len A. Pennacchio	Carlos Pantano-Rubino
2007	
Mickey Chiu	Jeanine Cook
Hooman Davoudiasl	
Bert Debusschere	
Jennifer S. Martinez	
Wei Pan	
Robin Santra	
Yugang Sun	
2008	
Cecilia Aragon	Lynford Goddard
Gary Baker	Thao (Vicky) Nguyen
Joshua Breslau	
Gianluigi Ciovati	
Jason Graetz	
Stefan Gerhardt	
Jeffrey Neaton	
Paul Sorensen	
Alexandre Tartakovsky	
Ivan Vitev	

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Office of Science Recipients

2009

Eric D. Bauer
Jeremy T. Busby
Gavin E. Crooks
Juan Estrada
Dillon Fong
Jacob M. Hooker
De-en Jiang
Sergei V. Kalinin
Trent R. Northen
Elena V. Shevchenko
Jacob G. Wacker

2010

Christian W. Bauer
Grigory Bronevetsky
Carole Dabney-Smith
David Erickson
Daniel Fredrickson
Christiane Jablonowski
Alysia D. Marino
Victoria J. Orphan
Wei-Jun Qian
Evgenya I. Simakov
Feng Wang

2011

Christopher Hirata
Heileen Hsu-Kim
Pablo Jarillo-Herrero
Peter Mueller
Daniel B. Sinars
Jesse Thaler

2012

Theodore Betley
Gary Douberly
Mattan Erez
Sean Hartnoll
Daniel Kasen
Jennifer Reed

Office of Electricity Delivery and Energy Reliability

Adrian Chavez

Office of Energy Efficiency and Renewable Energy

Adam Weber

Office of Defense Programs Recipients

2009

Ilke Arslan
Gianluca Iaccarino

2010

Fotini Chow
Gang L. Liu

2011

Amy J. Clarke
Jeffrey W. Banks
Heather Whitley

2012

Dr. Matthew Brake
Miguel Morales
Seth Root

U.S. Department of Energy Early Career Award for Scientists and Engineers Recipients by Year

Office of Science Recipients

2012

Office of Fossil Energy
Brian Anderson

Office of Nuclear Energy
Meimei Li

Office of Defense Programs Recipients

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