

Thirty-two researchers from the Department of Energy's (DOE's) Office of Science national laboratories have been elected Fellows of the American Physical Society (APS).

Each year, new members are honored with nomination by their peers for their "exceptional contributions to the physics enterprise; e.g., outstanding physics research, important applications of physics, leadership in or service to physics, or significant contributions to physics education."

The new APS Fellows in the DOE's Office of Science labs are:

The Ames National Laboratory

- Richard A. Lesar: For insightful work in theory, simulation, and modeling of the properties, transitions, and dynamics of molecular solids under high pressures, and of distributions of dislocations.
- Cai-Zhuang Wang: For significant advances in developing computational methods including tight-binding molecular dynamics for atomistic simulations, genetic algorithm for crystal and interface structure prediction, and Gutzwiller density functional theory for strongly correlated electron systems.

Argonne National Laboratory

- Karen L. Byrum: For contributions in advancing a complimentary experimental approach for studying dark matter by including cosmic gamma-rays and for contributions in developing new technologies for triggering and photo-detection.
- John W. Freeland: For development and use of new x-ray techniques to understand chemical, structural, electronic and magnetic features at oxide interfaces.
- Olle G. Heinonen: For contributions to understand the behavior of nanomagnets, including magnetization dynamics, and applications of nanomagnets to magnetic recording.
- John A. Schlueter: For synthesis of new organic conductors, superconductors and magnets, and exploration of their emergent physical behavior.
- Suzanne Te Velthuis: For contributions to the understanding of magnetic heterostructures utilizing polarized neutron reflectivity.

Lawrence Berkeley National Laboratory

- Elke Arenholz: For developing and applying advanced soft x-ray instrumentation to achieve seminal advances in understanding magnetic materials and thin films.

- Corwin H. Booth: For use of x-ray spectroscopy to elucidate the properties of bulk and molecular correlated electron materials.
- Andrew M. Canning: For his important contributions to the development of parallel and computational algorithms for a diverse range of electronic structure methods and their application to systems ranging from nanostructures, complex magnetic systems to nuclear detection materials.
- William M. Fawley: For his sustained contributions to beam physics, leading to the successful operation of coherent light source user facilities based on free-electron laser and related concepts and driving developments in intense relativistic electron and heavy-ion beam transport.
- Peter Fischer: For contributions to imaging spin structures and their dynamics with high resolution magnetic soft x-ray microscopy.
- Jinghua Guo: For pioneering soft x-ray spectroscopic studies of correlated solids, nano-scaled materials, and liquid phase systems.
- Alan W. P. Poon: For significant contributions to understanding fundamental neutrino properties through solar neutrinos, reactor neutrinos, beta decay, and neutrinoless double-beta decay experiments and for the resulting discoveries of physics requiring significant modification of the standard model.
- David J. Schlegel: For leadership of – and fundamental technical contributions to – high precision measurements of the expansion history of the Universe by carrying out massive galaxy redshift surveys to detect baryon acoustic oscillations.
- Feng Yuan: For his seminal contributions to the understanding of the quark and gluon structure of the nucleon and nucleus, especially, in the areas of the transverse-momentum dependent parton distributions and their factorization, nucleon spin structure, and gluon saturation in QCD.

Brookhaven National Laboratory

- Mei Bai: For outstanding contributions to the dynamics of spin-polarized beams and the acceleration of polarized protons for the first high energy polarized proton collider.
- Mary R. Bishai: For her contributions to flavor physics, including analysis of the NuMI/MINOS neutrino beam, leadership of the accelerator neutrino program, and contributions to understanding of the b-quark.

- Oleg Gang: For demonstrating and developing the principles of programmable self-assembly of polymer-based nanostructures and for elucidating the physical origin of their assembly behavior.

Fermi National Accelerator Laboratory

- John M. Campbell: For work in perturbative quantum chromodynamics, especially the precise simulation of standard model processes in high energy particle collisions.
- Deborah A. Harris: For leadership in measuring the neutrino reactions that enable current and future accelerator neutrino oscillation experiments
- Alexander V. Zlobin: For his multi-year leadership, personal innovative contributions and achievements in the development and demonstration of new generation superconducting accelerator magnets based on Nb₃Sn superconductor.

Oak Ridge National Laboratory

- Randy Fishman: For theoretical studies of the spin dynamics of multiferroic and spin-density wave materials, and for modeling inelastic neutron-scattering spectra.
- Bobby G. Sumpter: For outstanding scientific impact and development in computational soft matter and nanoscience through the development and use of principles from computer science and mathematics and the results of theoretical physics and chemistry to facilitate solving materials problems and discovery of new functional materials.
- Thomas F. Papenbrock: For innovative theoretical approaches to the nuclear many-body problem and other finite quantum systems.

Pacific Northwest National Laboratory

- David M. Asner: For his leadership in heavy flavor physics and for his key role in the analysis and interpretation of CLEO data.
- Donald R. Baer: For research and capability development that significantly advanced molecular-level understanding of environmentally important interfacial processes relevant to nanoparticle reactivity, mineral dissolution, and stress corrosion cracking.
- Christopher J. Mundy: For pioneering applications of Kohn-Sham density functional theory to further our understanding of complex processes that occur at the air-water interface.

Princeton Plasma Physics Laboratory

- Hong Qin: For pioneering work in the development of theoretical and numerical methods for high-intensity beam dynamics, and geometric approach and algorithms for gyrokinetic theory.

SLAC National Accelerator Laboratory

- Peter C. Rowson: For his leading role in precision electroweak measurements in the SLD detector at the Stanford Linear Collider.

Thomas Jefferson National Accelerator Facility

- Michael R. Pennington: For accomplishments in theoretical physics including describing the spectrum of mesons of QCD, in particular elucidating the role and nature of scalar mesons and for advancing our understanding of the strong-coupling regime of QCD through study of the Schwinger-Dyson and Bethe-Salpeter Equations.
- Stepan Stepanyan: For pioneering research to access generalized parton distributions through deeply virtual exclusive processes and the 3-dimensional imaging of the nucleon's quark structure, and for the development of innovative experimental methods and apparatus in medium energy hadron physics.

The Office of Science is the single largest supporter of basic research in the physical sciences in the United States and is working to address some of the most pressing challenges of our time. For more information, please visit <http://science.energy.gov>.

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