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News Release

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For immediate release

DOE to establish two Energy Frontier Research Centers at Argonne

Centers awarded combined $38 million over five years

ARGONNE, Ill. (April 28, 2009) – The U.S. Department of Energy's (DOE) Argonne National Laboratory will be home to two of 46 new multi-million-dollar Energy Frontier Research Centers (EFRCs) announced today by the White House in conjunction with a speech by President Barack Obama at the annual meeting of the National Academy of Sciences. The EFRCs, which will pursue advanced scientific research on energy, are being established by DOE's Office of Science at universities, national laboratories, nonprofit organizations and private firms across the nation.

Argonne's EFRCs will focus on catalysts for efficient energy conversion and on electrical-storage technologies for a variety of applications. DOE plans to fund each center at $19 million over five years.

"As global energy demand grows over this century, there is an urgent need to reduce our dependence on fossil fuels and imported oil and curtail greenhouse gas emissions," said Secretary of Energy Steven Chu. "Meeting this challenge will require significant scientific advances. These centers will mobilize the enormous talents and skills of our nation's scientific workforce in pursuit of the breakthroughs that are essential to make alternative and renewable energy truly viable as large-scale replacements for fossil fuels."

The 46 EFRCs, to be funded at $2-5 million per year each for a planned initial five-year period, were selected from a pool of some 260 applications in response to a solicitation by DOE's Office of Science in 2008. Selection was based on a rigorous merit review process using outside panels composed of scientific experts.

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"This is a very exciting opportunity for Argonne," Argonne Director-Designate Eric Isaacs said. "Argonne can bring its deep well of research expertise to bear on scientific grand challenges, which will open the door to energy technologies that will significantly alter and improve how we power our homes, businesses and vehicles."

EFRC researchers will take advantage of new capabilities in nanotechnology, high-intensity light sources, neutron scattering sources, supercomputing and other advanced instrumentation, much of it developed with DOE Office of Science support over the past decade, in an effort to lay the scientific groundwork for fundamental advances in solar energy, biofuels, transportation, energy efficiency, electricity storage and transmission, clean coal and carbon capture and sequestration, and nuclear energy.

DOE awarded Argonne's Institute for Atom-efficient Chemical Transformations (IACT) $19 million over five years. The funding award will allow IACT to use a multidisciplinary approach to address key catalytic conversions that could improve the efficiency of producing fuels from coal and biomass. IACT will focus on advancing the science of catalysis for the efficient conversion of energy resources into usable forms.

Catalysis in chemistry is the acceleration and direction of a chemical reaction caused by the introduction of a substance or material that remains unchanged by the reaction.

"Catalysts found in nature demonstrate how amazingly efficient and selective catalysts can be," said Argonne chemist Christopher Marshall, principal investigator and IACT director. "The institute's aim is to achieve with synthetic catalysts the type of control and efficiency of chemical conversions that are found in nature. To achieve that goal, new catalytic materials will be required. A major emphasis of IACT is the design and synthesis of new, complex, multisite, multifunctional catalytic materials that offer new paradigms for catalysis."

The Institute's members include Northwestern University, Purdue University and the University of Wisconsin.

DOE awarded Argonne's Center for Electrical Energy Storage: Tailored Interfaces (CEES) $19 million over five years from DOE. The director of CEES is Argonne Distinguished Fellow Michael Thackeray. CEES will investigate electrical-energy storage technologies for alternative renewable energy, transportation, medicine, defense, aerospace, telecommunications and consumer applications.

"CEES' main goal," Thackeray said, "is to gain a fundamental understanding of the interfacial phenomena that control electrochemical processes in electrical energy storage devices. This understanding will lay the foundation for the synthesis and design of electrode and electrolyte architectures that will lead to the discovery of future generations of energy storage materials and enable the development of batteries with enhanced capacity, power, safety and longevity. The center's emphasis will be placed on lithium batteries since they provide the best opportunity for greater-than-incremental advances."

Of the 46 EFRCs selected, 31 are led by universities, 12 by DOE national laboratories, two by nonprofit organizations and one by a corporate research laboratory. The criterion for providing an EFRC with Recovery Act funding was job creation. The EFRCs chosen for funding under the Recovery Act provide the most employment for postdoctoral associates, graduate students, undergraduates and technical staff, in keeping with the Recovery Act's objective to preserve and create jobs and promote economic recovery.

The U.S. Department of Energy's Argonne National Laboratory seeks solutions to pressing national problems in science and technology. The nation's first national laboratory, Argonne conducts leading-edge basic and applied scientific research in virtually every scientific discipline. Argonne researchers work closely with researchers from hundreds of companies, universities, and federal, state and municipal agencies to help them solve their specific problems, advance America's scientific leadership and prepare the nation for a better future. With employees from more than 60 nations, Argonne is managed by UChicago Argonne, LLC for the U.S. Department of Energy's Office of Science.

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