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NNSA Announces Selection of its Centers of Excellence for Academic Computational Science Partnerships

WASHINGTON, D.C. – Today the National Nuclear Security Administration (NNSA) announced the selection of its five new centers of excellence whose primary focus will be on the emerging field of predictive science. The following five universities will receive \$17 million each over a five-year period under NNSA's Predictive Science Academic Alliance Program (PSAAP) agreement:

- *the Center for the Predictive Modeling and Simulation of High-Energy Density Dynamic Response of Materials* at California Institute of Technology
- *the Center for Prediction of Reliability, Integrity and Survivability of Microsystems (PRISM)* at Purdue University
- *the Center for Predictive Simulations of Multi-Physics Flow Phenomena with Application to Integrated Hypersonic Systems* at Stanford University
- *the Center for Radiative Shock Hydrodynamics (CRASH)* at University of Michigan
- *the Center for Predictive Engineering and Computational Sciences (PECOS)* at University of Texas, Austin

"Since the cessation of underground nuclear testing, NNSA has used simulation and modeling tools and capabilities developed by the Advanced Simulation and Computing (ASC) program to support assessment and certification of our nuclear weapons stockpile," said NNSA Deputy Administrator for Defense Programs Robert Smolen. "ASC's academic alliances have been the training ground where graduate students and post-doctoral researchers gain and hone skills necessary to carry out large-scale simulations."

Predictive science is the application of verified and validated computational simulations to predict the behavior of complex systems where routine experiments are not feasible. The selected PSAAP centers will focus on unclassified applications of interest to NNSA and its three national laboratories: Lawrence Livermore National Laboratory, Los Alamos National Laboratory and Sandia National Laboratories.

The PSAAP centers will develop not only the science and engineering models and software for their large-scale simulations, but also methods associated with the emerging disciplines of verification and validation and uncertainty quantification. The goal of these emerging disciplines is to enable scientists to make precise statements about the degree of confidence they have in their simulation-based predictions.

“We expect the PSAAP alliances will continue to help develop the predictive science field and the workforce of the future, wherein simulations will be pervasive and instrumental in important, high-impact decision-making processes,” said Robert Meisner, director of the NNSA ASC program.

For further details on PSAAP, visit
<http://www.sandia.gov/NNSA/ASC/univ/psaap.html>.

Established by Congress in 2000, NNSA is a separately organized agency within the U.S. Department of Energy responsible for enhancing national security through the military application of nuclear science. NNSA maintains and enhances the safety, security, reliability, and performance of the U.S. nuclear weapons stockpile without nuclear testing; works to reduce global danger from weapons of mass destruction; provides the U.S. Navy with safe and effective nuclear propulsion; and responds to nuclear and radiological emergencies in the United States and abroad. Visit www.nnsa.doe.gov for more information.

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