

Washington State University Scientists Land \$8.5 Million Defense Contract

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Contact:

Yogendra Gupta, WSU Institute for Shock Physics and Applied Sciences Laboratory, 509-335-7217, shock@wsu.edu
Cherie Winner, WSU News Service, 509-335-4846, cwinner@wsu.edu

SPOKANE, Wash. -- A team of scientists at Washington State University's Applied Sciences Laboratory (ASL) has been awarded an \$8.5 million research contract to develop and demonstrate reactive materials to be used in a new generation of national security applications. "We've been asked to make a material that is mechanically as good as steel, and yet can release chemical energy on demand," said Yogendra M. Gupta, who is director of WSU's Institute of Shock Physics and one of five principal investigators on the project.

The contract, awarded by the Defense Advanced Research Projects Agency (DARPA) of the U.S. Department of Defense, will begin later this year and run for three and a half to four years. Of the \$8.5 million total, \$6.4 million will come to WSU. The remainder will be shared by collaborators at the Southwest Research Institute and SRI International.

Reactive materials are a relatively new class of materials comprised of two or more substances, such as a metal and a synthetic polymer. Ordinarily, the material is stable and very strong. Under extreme conditions that cause deformation and fracture, the material fragments into fine particles. The particles then react to release tremendous amounts of chemical energy, in the form of heat and blast pressure. Gupta described it as akin to a "controlled explosion."

Reactive materials offer an advantage over conventional explosives in that they do not release energy unless they undergo deformation and fracture at high impact pressures. Items made of reactive materials can be safely moved, thrown and even burned. The other principal investigators on the project are Atakan Peker, director of advanced materials for ASL; Choong-Shik Yoo, professor of chemistry and associate director of ISP; Gordon R. Johnson, of the Southwest Research Institute; and James Gran, of SRI International. Gupta emphasized the multi-disciplinary nature of the research and the importance of the Applied Sciences Laboratory.

"Without the expertise of all five principal investigators, the work could not be done," he said. "This is not [the kind of work] universities typically do. If it was not for ASL, we would not have gotten the project."

The Institute for Shock Physics (ISP), based on the Pullman campus of Washington State University, is a multi-disciplinary research organization with an emphasis on shock wave and high pressure research. The Applied Sciences Laboratory, a component of the ISP, is a contract research organization whose mission is to link academic research to practical applications. It is based at WSU Spokane. DARPA funds and directs basic and applied research and development projects for the U.S. Department of Defense.