



## Pfund Program More Than Reaches Goal

The following is the second in a two-part series on a unique Louisiana EPSCoR pilot program introduced in 2004 and funded in 2005.

Forty Louisiana EPSCoR seed grants awarded in 2005 had, by mid-2007, resulted in 22 grants totaling \$14,360,086, including almost \$9 million from federal agencies; 19 pending proposals, 88 presentations, 68 publications, and support for 55 student researchers.

The one-year seed grants of up to \$12,000 each were awarded to science and engineering researchers at institutions across the State.

The ultimate goal of the Pilot Funding for New Research (Pfund) program, which was funded by the National Science Foundation EPSCoR program, was to help research faculty grow and become more competitive in acquiring federal funding.

“We more than reached our objective,” observes Dr. Michael Khonsari, EPSCoR project director and originator of the Pfund program. “The 108 proposals that we received were so commendable that we requested and received \$180,000 from the Board of Regents Support Fund to match the \$180,000 NSF EPSCoR funds. This enabled us to fund twice as many proposals than originally planned, a fact for which we were especially grateful as the number of submissions was more than anticipated.

“The out-of-state reviewers, who evaluated each of the proposals based on the potential of both the investigator and the project to secure federal funding, obviously agreed with our assessment of the Pfund submissions. They ranked 50 percent at 90 or above, 38 percent at 92 and above, and one with a perfect score of 100.”

The Pfund project was the result of a 2003 Louisiana EPSCoR online survey of the State’s research faculty and vice chancellors for research. Funding for the exploration of novel research and development of innovative skills that help researchers become more competitive for federal grants was one of the identified needs.

Untenured faculty were invited to use Pfund to enhance their research focus, explore new ideas and develop cutting-edge techniques; tenured faculty, to become more competitive by investigating new areas requiring a shift in their current research directions. Award dollars could be used in support of Pfund research projects for student researchers, travel, and scientific equipment and supplies.

Highlights of 11 of the 40 funded programs include the following:

Geologic mapping in remote Gansu Province, China, resulted in the first data set of its kind to document Tertiary left-lateral faulting beyond the Tibetan Plateau that could accommodate the extrusion of crustal blocks. These observations fundamentally change the tectonic framework of eastern Asia and represent a major advance in understanding the region. They resulted in a three-year NSF grant of \$198,910 to support additional geologic study in the Gansu Province, starting the summer of 2006, by **Dr. Brian J. Darby, Louisiana State University and A&M College (LSU)** assistant professor of geology/tectonics, and graduate student Joseph (Jay) E. Smith (see picture).



Jay Smith, LSU Geology and Geophysics Master’s student in the Hei Shan (Black Mountains), Gansu Province, China.

The quest of **Dr. Zhiqiang Mao’s** team is searching for novel quantum phenomena in ruthenate materials and investigating their underlying physics. Understanding novel physical phenomena in ruthenates, transition metal oxides, is not only important for the development of the basic science of materials, it also has potential consequences for applications of correlated electronic materials. The Pfund grant enabled the **Tulane University** assistant professor of physics to submit a proposal for an NSF CAREER award that was funded for \$410,000 as well as a DOE EPSCoR proposal funded for \$450,000. He also gave two international presentations on his research, supported the research of two students, and authored or co-authored six articles.

Using cutting-edge technology, **Dr. Weilie Zhou** and his team developed a compact, versatile, and highly sensitive gas sensor for applications in anti-terrorist, military, industrial, and commercial fields. The director of the Electron Microscopy Facility of the **University of New Orleans’** Advanced Materials Research Institute, reports that three grants for which he was a co-principal investigator were direct results of the initial support of his Pfund. Two were awarded by the Defense Advanced Research Projects Agency of the Department of Defense, one for \$4 million, the other for \$1.8 million. The third was a \$5 million Board of Regents Post Katrina Support Fund Initiative grant. Dr. Zhou gave presentations at two international and six national conferences/meetings and supported the research of one undergraduate and two graduate students.

The National Space Biomedical Research Institute awarded **Dr. Timothy Hammond** a \$100,000 grant for an experiment known as GeneSat 2 on space shuttle STS-118, scheduled for launching to the International Space Station in August 2007. The Pfund grant also facilitated his participation in a NASA flight experiment of space shuttle STS-115 launched in September 2006, also to the Space Station. A graduate student working with the **Tulane**

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**University Health Sciences Center** internal medicine professor was awarded a Louisiana Space Consortium Fellowship.

**Dr. Arjan Durreesi's** team developed a research plan and preliminary results on broadcasting on heterogeneous ad hoc networks that resulted in a new protocol, Geometric Sensor Broadcast (GSB). The **LSU** assistant professor of computer science identifies GSB's major advantages as scalability, simplicity and robustness, making it a "perfect candidate as a practical solution for wireless networks." Of special interest to Louisiana, it can be used for emergency communications among cell phones as, for example, during hurricanes. He presented results at five Institute of Electrical and Electronics Engineers international conferences.

The deprivation of carnitine, a micronutrient important for energy production from fat and other fuels in the heart, in the diets of newborns, particularly premature infants, was the focus of a project nearing completion when Katrina struck. In a middle-of-the-night rescue mission, **Dr. Duna Penn**, **Louisiana State University Health Sciences Center-New Orleans** neonatologist and professor of pediatrics and physiology, and her team saved critical samples that had been frozen and stored for later analysis. The samples were transported to the Pennington Research Center in Baton Rouge where they remained until her lab resumed function

in October 2005. Although limited by small sample size, the data suggest that carnitine deprivation has deleterious effects on cardiac function over time and may impair cardiac recovery from hypoxia due to poor energy status.

As a result of her research project, **Dr. Sandra Selmic**, **Louisiana Tech University** assistant professor of electrical engineering, was invited to serve as an NSF panel reviewer in both 2006 and 2007. NSF also invited her to attend the *2006 U.S.-Japan Young Researchers Exchange Program in Nanotechnology and Nanomanufacturing* and present at the *2006 U.S.-Japan Young Scientists Symposium on Nanotechnology and Nanomanufacturing* in Tokyo. Dr. Selmic also received a \$30,000 grant from Tech's Institute for Micromanufacturing and \$10,000 from Tech's Center for Entrepreneurship and Information Technology.

**Dr. Theda Daniels-Race**, an **LSU** associate professor of electrical and computer engineering who joined LSU to pursue a new line of research in hybrid electronic materials, reported that her Pfund investigations gave her a firm foundation upon which to build, both scientifically and for future funded research. It also led to a \$78,878 Board of Regents Support Fund enhancement grant.

A Southern University/LSU joint proposal for conducting preliminary research leading to the development of an effective nondestructive method for monitoring damage to composite structures was awarded a U.S. Department of Energy three-year, \$1.5 million grant. The lead investigator, **Dr. Su-Seng Pang**, the **LSU** Jack Holmes professor of mechanical engineering and adjunct professor at **Southern University and A&M College**, reported that a successful analysis would have a wide impact on military air and rotorcraft, automotive and civil aviation infrastructure.

The award enabled **Dr. Kenneth Bondioli**, associate professor in the **LSU AgCenter** School of Animal Sciences to establish a program in somatic and bovine stem cell technology in his laboratory. He was also invited to make presentations at two international meetings.

**Dr. Natalia A. Sidorovskaia**, **University of Louisiana at Lafayette** associate professor of physics, gained initial expertise in the area of medical acoustics through summer research and conferences. She established a collaboration with the National Center for Physical Acoustics and collected data for use in a federal grant proposal.

"Based on the amazing success of our first Pfund proposal, we offered it again in 2006," adds Dr. Khonsari. "We are anticipating that those seed grants will yield yet another bumper crop."



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