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October 6, 2008

UNM Partner in NSF Engineering Research Center to Advance "Smart Lighting"

The National Science Foundation is establishing a new Engineering Research Center whose goal will be to supplant the common light bulb with next-generation lighting devices that are smarter, greener and ripe for innovation. The core institutions in this prestigious award are Rensselaer Polytechnic Institute, the lead university, the University of New Mexico and Boston University. The program also includes interactions with middle schools and high schools, industry and with government labs including Sandia National Laboratories.

UNM President David Schmidly says, "Our participation in this center offers a chance for our engineering students and faculty to create energy-saving technologies that will improve our society and create new business opportunities. We are particularly excited that this program will also have a strong focus on outreach, and we anticipate that the new field of Smart Lighting will increase the number and diversity of students entering science, math and engineering education."

UNM will provide the nanotechnology for this program and the team will be led by the ERC Associate Director Stephen Hersee, professor of Electrical and Computer Engineering at UNM. Hersee also has an appointment with the Center for High Technology Materials, and his core team will include Steve Brueck, CHTM director, distinguished professor of Electrical and Computer Engineering and professor of Physics & Astronomy, and Marek Osinski, professor of Electrical and Computer Engineering and Professor of Physics and Astronomy. Hersee says UNM will receive between \$4 and \$5 million for this research activity during the next five years.

One project at UNM will be to develop a dime-sized, solid-state microscope that will have no lenses or moving parts, but will image just as sharply as a regular microscope that is a thousand times larger.

The wonderful thing about this program is the huge breadth says Hersee. The research will span so many disciplines including communications, healthcare, computer displays and the autonomous control of vehicles. Light is so much a part of our lives, the possibility of adding extra functions to this light – to make it "smart" - means that this program can benefit many aspects of the way we live.

Imagine:

- Your room lights send and receive data and communicate with your PDA or computer.
- Your automobile lights talk to the traffic lights, and to other cars around you, to warn you of traffic problems, eliminate red-light violations, and eventually help do the driving for you.
- Your laptop battery really does last all day.
- Room lighting that so accurately replicates sunlight, sunflowers follow it.
- Your TV gives you a 3D, full-color image.
- Analysis of bio-samples becomes automated and rapid, cutting health care costs.

Much of the transformational science in this program is so new that you can't find it in standard textbooks. So this ERC will work closely with local middle and high schools, as well as with national and international strategic educational partners, to develop educational materials. These interactions will prepare budding engineers for this exciting new career path and will work especially hard to attract women and other minorities into this new branch of science. It will be science you can see.

The program will work closely with industry so that once the Smart Lighting technology is developed it can be efficiently transferred into the marketplace. Students will get to see how this technology transfer process works and they will have opportunities to become entrepreneurs, creating new businesses and new jobs for the U.S. economy.