Allgood tackles life on his own terms.
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Research Highlights . . .

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Energy efficiency on parade

DOE's Building America program cosponsored a house in the Denver Parade of Homes that cuts energy use by an estimated 40 percent over model energy codes and 70 percent over the U.S. average for a comparable house. The Building America program works with builders to reduce energy use and construction waste in new housing. DOE's National Renewable Energy Laboratory provides technical support for this and other Building America projects around the country. The home features advanced window glazings, computer-driven lighting, high performance heating, ventilation and air conditioning systems, recycled beams and trusses to reduce lumber use and other state-of-the-art resource efficient products and systems.

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Fiddling on the roof

Light colors better reflect the sun's heat while dark colors better absorb it. Similarly, light-color roof materials make for a cool roof by reflecting most of the sun's energy. Scientists have found that buildings with light-colored roofs can save consumers money on their utility bills. Despite the simplicity of the cool roof concept, tests performed at DOE's Oak Ridge National Laboratory show that widely varying conditions—insulation, type of house, etc.—affect those savings. Performance over the long term is also important: ORNL's roof testing indicates roof membranes with high initial solar reflectance degrade with time, weather conditions and accumulating dirt.

[Fred Strohl, 423/574-4165, strohlhf@ornl.gov]

Insurance industry can benefit by using solar power

According to a report by DOE's National Renewable Energy Laboratory, the insurance industry can save millions of dollars in property claims resulting from natural disasters by adopting solar and other renewable energy technologies when planning for nature's fury. The report, "Solar Technology and the Insurance Industry: Issues and Applications," discusses the impact of natural catastrophes on the insurance industry, the effect of power outages on businesses and people and the risks of portable power generators. It provides examples of photovoltaic technology uses for disaster mitigation, response and recovery. Visit http://www.nrel.gov/hot-stuff/press/4699insurance.html for more information.

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On the road to recovery

A road embedded with sensors to detect smuggled nuclear weapons may sound like something from a movie, but it's actually real-life technology developed at DOE's Pacific Northwest National Laboratory. Researchers there have developed a radiation sensor comprised of lightweight, flexible glass fibers that provides portable, real-time measurements of neutrons and gamma rays. Called PUMA for plutonium measurement and analysis, the sensor can be embedded in materials or wrapped around objects to analyze contents. For example, fibers can be installed in asphalt roads to detect unauthorized or diverted nuclear weapons material, or wrapped around drums and other containers to inventory contents. PUMA has been licensed to Canberra Industries of Meriden, Conn.

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DOE Pulse highlights work being done at the Department of Energy's national laboratories. DOE's laboratories house world-class facilities where more than 30,000 scientists and engineers perform cutting-edge research spanning DOE's science, energy, national security and environmental quality missions. ***DOE Pulse*** (www.ornl.gov/news/pulse/) is distributed every two weeks. For more information, please contact Jeff Sherwood (jeff.sherwood@hq.doe.gov, 202-586-5806).

Muon watch

Scientists at DOE's Los Alamos National Laboratory have put the finishing touches on a muon detection factory, one part of a large physics experiment called PHENIX or Pioneering High Energy Ion Experiment. Designed to explore what happened shortly after the birth of the Universe—the Big Bang—and to uncover the secrets of the spin structure of the proton, PHENIX is a very large detector system to analyze the momentum of atomic particles produced at Brookhaven National Laboratory's Relativistic Heavy Ion Collider (RHIC).

Muons, or mu meson particles, are elementary particles that occur naturally when high-speed cosmic rays collide with the Earth's upper atmosphere, but are also produced at RHIC. Muons have a half-life of roughly two-millionths of a second, which has made them one of the most elusive members of the lepton family. Leptons and quarks are the two building blocks of matter that researchers believe played a crucial role in the early stages of the formation of matter during the Big Bang.

Workers at the PHENIX experiment tip a frame detector, designed to document the passing of muons, on its side.

Working with glue, foil, wires and packing material, the Los Alamos team has been constructing the anode and cathode frame detectors that will attempt to document the passing of each muon particle. The exactingly fine frames, layered with sheets of Mylar foil, combine with electronic grids five times finer than a human hair to form each section of the muon detector arm. Each muon arm must both track and identify muons, so each contains a muon tracker and a muon identifier.

One of the two muon detector arms should be taking data at PHENIX by October of 2000; the second will follow in approximately a year's time. The PHENIX Collaboration unites more than 430 scientists in 11 countries and at 43 institutions.

Submitted by DOE's Los Alamos National Laboratory

Glenn Allgood is a problem solver from way back

These days, as a researcher at DOE's Oak Ridge National Laboratory, the problems are very different from the ones he faced growing up on the streets in Atlanta. Back then, his focus was on supporting his two sisters and ill mother. To pay the bills, he dropped out of high school in 1966, his senior year, and went to work.

Allgood unloaded trucks during the day and attended school at night, then got a job servicing vending machines. He earned his General Equivalency Diploma in 1967 and went to work for Atlanta Gas Light Company as a senior engineering assistant. In December he joined the Navy.

"If I were going into the service, I wanted it to be on my terms," said Allgood, who was assigned to a submarine chaser and was later attached to a Marine helicopter squadron. In 1973 and enrolled at DeKalb College, then spent some time at Georgia State and Georgia Tech before enrolling at the University of Tennessee (UT), where he majored in electrical engineering.

Twenty-six years and three degrees later—he earned a doctorate from UT in 1991—Allgood uses mathematics and engineering principles daily. He designs instruments to detect flaws in textiles, diagnose lung conditions and he's developing better methods to treat burn patients. Allgood is also involved in human factors and biomedical research and in the development of economic models for defining strategic R&D initiatives.

Whatever the job, Allgood is driven to be the best. It doesn't matter if it's flipping burgers or designing sophisticated electronic instruments. Integrity, honor and accountability mean everything to Allgood.

"You're only as good as your word," he says. "Honor and integrity are all you have. That's one reason I can relate to the military. There's a sense of honor and accountability in the military. Take them away and you have nothing."

Submitted by DOE's Oak Ridge National Laboratory