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LANL has big plans for nanoscience

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Senators Pete Domenici and Jeff Bingaman

By ANDY LENDERMAN | The New Mexican
August 22, 2006

A Seattle company has bought the rights to a nanotechnology development at Los Alamos National Laboratory and plans to manufacture a new product in the city's research park based on lightweight nanotubes that are 100 times stronger than steel.

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Nanotechnology -- the study and application of very small molecules -- has the potential to radically advance materials

used in medicine, manufacturing and computers, supporters say.

CNT Technologies Inc. purchased the rights to some of the lab's carbon-nanotube technology, company vice president Randy Tremper said.

The lab has made some longer carbon nanotubes, which makes them easier to weave into super-strong materials. A nanometer is one-billionth of a meter in size. A nanotube is a long carbon molecule and its typical size is about two to three nanometers in diameter and up to five millimeters long. The company has developed a product called SuperThread made of these nanotubes.

"What we're working with is nanotubes that are one to five millimeters long," Tremper said. "But those are longer than anybody else's at the moment. It's the longer length that allows us to spin the fibers into threads and make a usable product."

Tremper said his company plans to have a pilot plant based at Los Alamos Research Park within six months that will produce one kilogram of SuperThread a day.

"And that will allow us to give major quantities of samples to companies and government agencies that need material that is ultra strong and ultra light," he said.

Full-scale production -- if everything goes smoothly with the pilot project -- would come in about 18 months.

A lab scientist involved in the research said the fact that the nanotubes are longer makes them easier to weave into fibers.

"The longer they are, the stronger the fiber, because you don't have as many connections," lab scientist Dean Peterson said.

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The nanotubes weigh less than traditional carbon fibers because they are hollow. And initial tests show that SuperThread is 100 times stronger than steel, according to a lab news release. "You can imagine if you make a Hummer out of that it would be a lot less weight and a lot stronger," Peterson said.

The nanotube technology could also be applied to airplanes and bulletproof vests, he said.

"It's stronger than most any materials that are being used now, like Kevlar or any carbon composite that they make planes out of now," Peterson said.

Tremper said the pilot plant in Los Alamos would have 15 to 20 employees. He said it's unclear where a full-scale production factory would be located, but he said the factory would have hundreds of employees. The company is seeking investors.

The lab researchers working on the technology and the company will be in the same building, Peterson said.

Also Monday, U.S. Sens. Pete Domenici, R-N.M., and Jeff Bingaman, D-N.M., announced a new federal nanotechnology research effort that will be based at New Mexico's national laboratories.

Los Alamos National Laboratory received \$18.3 million for a research center, and Sandia National Laboratories in Albuquerque received \$57 million. The U.S. Department of Energy is establishing research centers at three other labs as well.

"It is vital that our nation remain competitive with the rest of the world when it comes to science and technology, so the work being done at DOE labs is particularly important," Domenici said in a news release.

Domenici also said the new facilities will attract more researchers to the state.

Bingaman took Monday's announcement to push one of his dearest issues, education. "Much of our country's work in the field of nanotechnology will depend on an educated and dedicated work force," he said. "It is vital that we recognize the importance of teaching math and science in our elementary and high schools so that our work force 15 years from now can overcome the next set of challenges."

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By Hector Sanchez (Submitted: 08/22/2006 7:45 am) ([Report this comment](#))

"Also Monday, U.S. Sens. Pete Domenici, R-N.M., and Jeff Bingaman, D-N.M., announced a new federal nanotechnology research effort that will be based at New Mexico's national



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laboratories."

Keep the pork and earmarks flowing, guys! Why, without you and your fellows, we'd almost be able to have a balanced budget in this country.

Now I'm sure I'll be flamed because, "All the other states and their senators do it."

The fact is, the Labs of NM have garnered a pretty huge share of the pork pie over the years. No one complains about the effect on the US national debt because, well, it's for New Mexico...good old fashioned selfish behavior.



By Karen Hulick (Submitted: 08/22/2006 7:40 am) ([Report this comment](#))

Nano technology, this is the future, it will eventually replace the need for most of mankind.

By atma wiseman (Submitted: 08/22/2006 6:27 am) ([Report this comment](#))

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