



# the coalfield

A Progressive Newspaper Serving Our Mountain Area Since 1911

## PROGRESS

TUESDAY

August 23, 2011

Vol. 100 • No. 67

16 Pages

NORTON, VA 24273

USPS 120-120 \$1.00

# *Firm eyes uses for biopolymer*

**JODI DEAL**  
STAFF WRITER

**WISE** — Two African violet plants sit under a grow light in a laboratory at the Appalachia America Energy Research Center near Wise. One looks worse for the wear, while the other is flourishing.

It's not that one is under the care of someone with a green thumb and the other belongs to someone with less aptitude for horticulture. Both plants are under the care of chemists Tim Hopkins and Jeffrey Mecham, who cur-

**ENERGY CENTER, PAGE 2**



**Tim Hopkins, chief technology officer of NanoQuantics, shows off a special biopolymer that helps stabilize soil. It could be used for everything from dust reduction to fertilizer.**

**His company will soon begin testing clean coal technology alongside the product shown here at the Appalachia America Energy Research Center near Wise.**



JODI DEAL PHOTO

# ► Energy center

FROM PAGE 1

rently are the only employees of NanoQuantics, a research company that's a subsidiary of the Blacksburg-based UXB International.

The happy African violet was sprayed with a special biopolymer compound the two have been working on at the center, while the other wasn't.

But the substance they're working on doesn't just keep finicky flowers happy. It can do everything from preventing erosion to protecting groundwater near ammunition testing grounds from getting contaminated by materials in bullets.

The key, Hopkins explained in a recent interview, is a special bacteria that is found on plants. It's the stuff that makes soil clump up and stick around roots and protects roots from toxins.

NanoQuantics has isolated the binding agent and can produce it in dry form or in a solution that can be sprayed over crops or other surfaces.

"The raw materials are bacteria and sugar," Hopkins said. "There are no toxic chemicals, no harmful byproducts. If this breaks down into anything, it's a sugar."

You could eat the stuff, he added, and although it wouldn't be particularly tasty, it wouldn't hurt you, either.



▲ Looks like the African violet on the left got a raw deal. It's actually been treated just like its counterpart on the right, with one key exception — the plant on the right was treated with a special substance under development at the Appalachia America Energy Research Center.

## WHAT'S IT FOR?

Not only can the substance be used on berms at ammunition testing sites, on agricultural fields or even on plants at home, it can also be sprayed on roads near mines and quarries to keep dust down naturally and effectively, Hopkins said. He and Mecham have already carried out tests at local mine sites, and have sold a batch of their product to a local mining company. They're looking to market it for the same purpose in underground mines.

The product can help replace surfactants, alcohols and petrochemicals used for dust abatement and soil stabilization, Hopkins added, not only keeping those chemicals off the ground but also reducing the country's reliance on foreign oil.

At test plots in Mississippi and Virginia, they're using the substance as a replacement for fertilizer and stabilizing substances. They're seeing results, he reported, of up to eight times greater crop yields and two to three times greater yields with biomass like grass

and clover.

There's more work to be done — the substance might also have applications in wound healing, Hopkins noted.

In addition to a lab filled with different strengths and varieties of the substance, NanoQuantics has installed huge vats in a spacious bay at the center. That's where up to 60,000 gallons of the product can be produced for commercial distribution, Hopkins explained during a tour.

As soon as the finishing touches are put on the facility — such as the delivery of a few more pieces of equipment and last-minute tweaks on water and air lines — commercial production can begin. That's when NanoQuantics will start hiring not only workers to make the product, but also lab technicians. The jobs will all require some education, he noted. The company expects to be ready by October.

Mecham pointed out that Wise County is a good site for a manufacturing operation, noting that local people already have the skills needed to not only make the product, but also to work as service personnel who would apply the product for customers out in the field.

"People don't want you to bring a magic liquid and leave it. They want you to take care of it all," Mecham said.

## OTHER PROJECTS

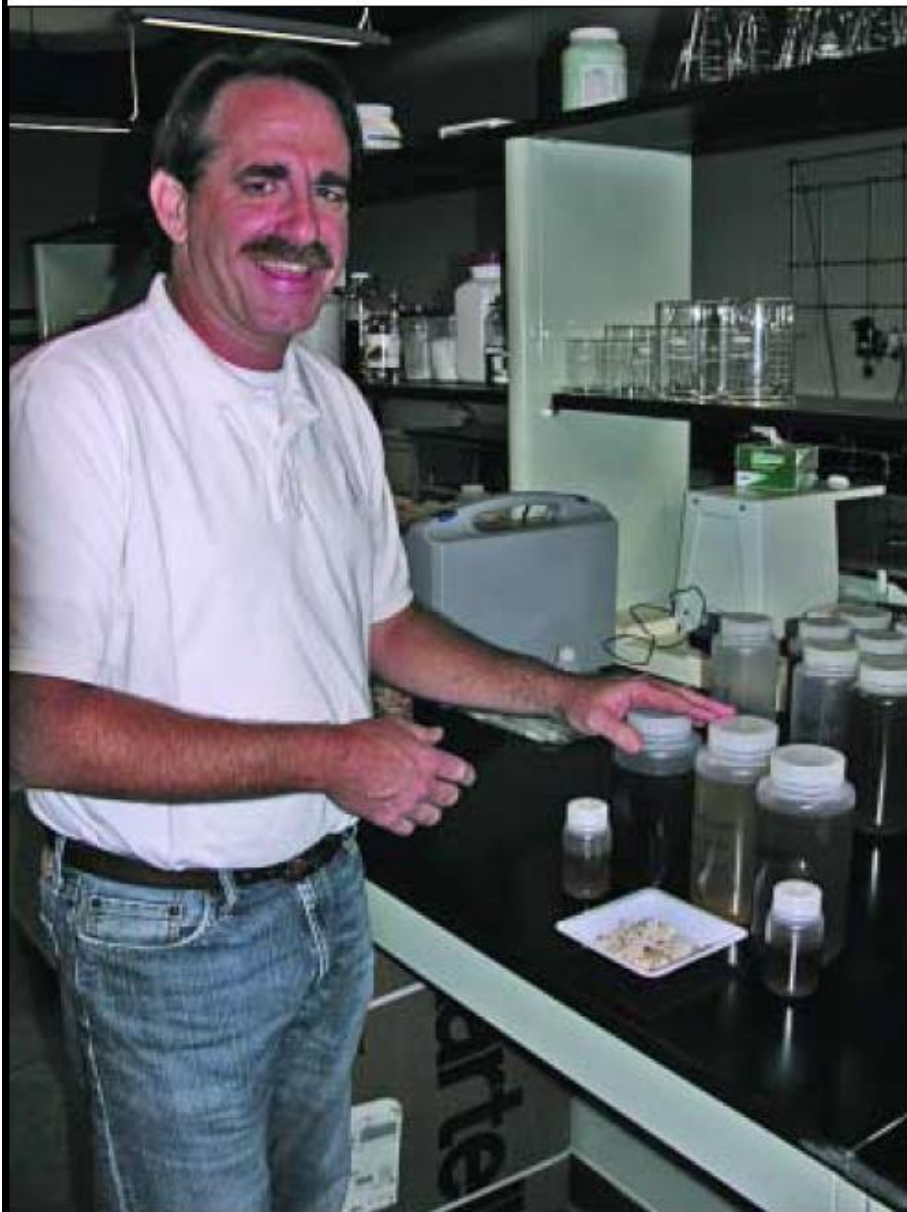
NanoQuantics doesn't just plan to work on the biopolymer, Hopkins and Mecham report. Next up, they hope to get to work on research toward using nanoparticles to scrub coal before it's burned, removing sulfur, mercury, selenium and other elements that might otherwise go up an emissions stack.

"We hope to extend the life on coal-fired power plants which currently can't meet EPA standards," Hopkins said, noting that the scrubbing process, in theory, would be much less expensive to carry out than expensive retrofits to scrub smoke in the stack.

The cleaning process could be used to turn refuse coal going to waste in gob piles into very viable fuel, saving money and cleaning up mountainsides, Mecham added.

"It's laying right there. You don't have to dig underground or take the top off of a mountain — it's everywhere. There's a billion tons of it, literally."

Learn more about NanoQuantics at <http://www.nanoquantics.com>. ▲



JODI DEAL PHOTOS

▲ **NanoQuantics Chief Technology Officer Tim Hopkins shows off several varieties of a special biopolymer his company has been testing and plans to soon produce at an energy research center near Wise.**

▶ **This might look like some kind of exotic but unappetizing health food. It's not. It's a special substance that can stabilize soil. It can come in everything from a liquid form to dried, crumbly solid material.**



**This is reprinted with permission of *The Coalfield Progress*, Norton, Va.**

