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Tiny and big ideas compete for high-tech award

Cool stuff is fun, and nothing's cooler these days than nanotechnology. But sometimes succeeding in the real world means not being too cool.

"We're not doing anything too fancy. No high vacuums, no fancy lasers, no crazy gases; no 'un-obtain-ium' types of catalysts, where you get one pound per century out of Central Africa," said Peter Antoinette, CEO of NanoComp, a Concord startup that's turning carbon nanotubes into high-tech fabrics that are strong, light and can even conduct electricity.

"We're utilizing low-cost types of raw materials, with an off-the-shelf style furnace, heating systems," he said.

Exactly how they're being used is, not surprisingly, secret, because it's the key to NanoComp's growth from a three-person research spin-off to its current 10-person size and, hopefully, to the big-time.

The company just had a successful investment round from various groups and angel investors (including Hollis' Mort Goulder), who were charmed in part by its success with military contracts.

I'm charmed in part because NanoComp is one of five companies vying tonight for the title of High Tech Product of the Year, High-Tech Council.

This sounds like it could be a pretty lame event – a trade group gives itself prizes; big whoop – but it's actually impressive.

For one thing, the winner gets to show off in a big display case in the Manchester airport, which will replace the metal moose. For another, the winner will be chosen by vote of the people who attend the dinner, following presentations by the companies. "The wisdom of crowds," anyone?

Best of all, though, are the five final products chosen by judges from a 31-company field.

They range from outdoorsy (a super-duper camping stove) to geeky (virtual reality for computer gaming) to corporate (Kollsman's system giving pilots infrared vision out their windshields).

New Hampshire sometimes exaggerates its tech credentials in an attempt to move out of the shadow of that large city to the south – you know, the one with the good football team – but this lineup lends credence to our boasts.

I was particularly intrigued by NanoComp because research into the behavior of very small molecules (those around a nanometer, or one-billionth of a meter, in size) is a hot topic both at UMass-Lowell and University of New Hampshire, which are two-thirds of a regional university nano-manufacturing consortium.

Things behave very differently at nanoscale, which lies between the atomic level where quantum mechanics rules, and the normal-world level where Newtonian physics rules. Basic concepts like friction become mind-bendingly complex, and you don't manufacture items so much as grow them in chemical soup.

NanoComp works with carbon nanotubes, which are to nanotech what the I-beam is to skyscrapers.

In the right circumstances, carbon molecules will hold hands in such a way that they form a circle, and then join feet in such a way that all those circles become a sub-microscopic tube that can be used in a

variety of ways.

Among other things, they can be quite good conductors of electricity and have some surprising heat-transfer capabilities. But the science is so new that making nanotubes of consistent quality and size, and doing it cheaply, is still a problem.

Antoinette says NanoComp is using better nanotube-growing methods developed by Dartmouth's David Lashore, now the company CTO, and Joe Brown at Synergy Innovations Inc., a Lebanon technology-development company.

The resulting tubes are long enough – up to inches long – that NanoComp says it can weave them into fibers (NanoYarn) or fabric (NanoFelt).

"All of the previous methods were very much like a powder, very short. Powders are tough to work with, don't leverage inherent properties," he said.

Those properties include enormous strength, which is why the Army gave NanoComp a multi-year contract to work on body armor.

The issue now is to show NanoComp's methods are suitable for high-volume output at a cost the market can bear. That same issue, of course, faces pretty much any company that makes anything.

Only then, says Antoinette, can they start thinking about the "Star Trekian types of things" that come up when discussing nanotech, like space elevators.

Cool stuff, in other words.
