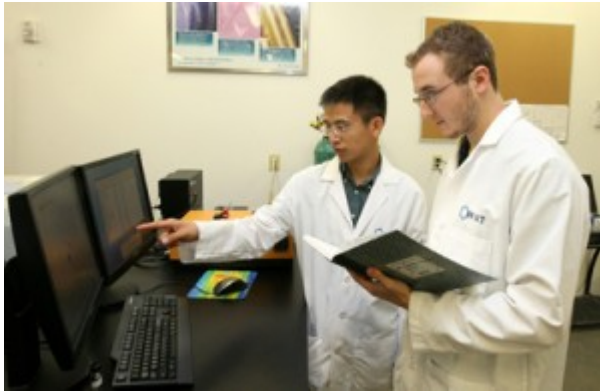


# Building a better battery: Firm developing technology for all-electric cars

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Intern Chase Brown, right, and Senior Development Engineer Yongqiang Tan with SouthWest NanoTechnologies Inc. look at a fluorescence spectrum Monday. (Photo by Maike Sabolich)

OKLAHOMA CITY – SouthWest NanoTechnologies Inc. has come up with a solution to the challenge of heavy batteries that can't hold a charge for all-electric vehicles, Chief Executive Dave Arthur said.

The potential behind the company's multi-walled carbon nanotubes could help move that segment of the auto industry farther down the road to public acceptance, he said.

"It's like when you first get a new laptop computer you might get five hours out of it and then a year later you're lucky to get two hours of use without a charge," Arthur said.

"With every discharge cycle, the typical battery breaks down and loses its capacity to charge.

"Consumers will tolerate that to a certain extent for laptops and cell phones. But it's not acceptable for a car that's supposed to have a 40-mile range that shrinks to 20 miles. That could be a severe limitation," he said. "New materials for batteries are badly needed. Our carbon nanotube materials ... will allow enhanced cathodes which will go a long ways toward addressing those performance issues."

The company recently entered a \$500,000 grant-backed partnership with the University of Oklahoma to solidify partnerships with several automotive manufacturers as well as lithium-ion battery producers to advance fully battery-powered vehicles. SWeNT will supply what Arthur called "nanocomposite paste" with the company's specialty multi-

wall carbon nanotubes, which will be sold to fabricators of finished cathodes and battery manufacturers.

“Not any old carbon nanotube material is going to be well-suited for automobile lithium-ion batteries,” he said. “And we also have an ability to put our material into a form that’s safe and easy to use. Carbon nanotubes are notoriously difficult to mix into other materials.”

SWeNT’s new materials exceed performance standards of the so-called “super pure” single-wall nanotubes currently preferred in the market for lithium ion batteries, he said. More importantly, the multi-wall nanotech does so with about a quarter of the carbon, which means overall greater capacity with less weight.

Now, the company is producing those nanotubes in quantities of kilograms. In 10 years, the demand for those materials could exceed six tons daily, he said.

“We’re going to have to scale up our production, and work collaboratively with key industry players to complete the development for application,” he said.

Although Arthur has a road map leading to an improved final product, that’s not the company’s business model, he said. SWeNT, as Arthur refers to SouthWest NanoTechnologies, wants to develop the raw material for specific applications – SWeNT can provide the brick and mortar and offer a vision of a house’s architecture, metaphorically speaking, but it will be up to someone else to actually construct the buildings and put them into the real estate market.

“We’re not going to be making or selling batteries or cathodes. We will be making the task easier and more effective,” he said. “We want to be ready for this amazing market opportunity, which will consume tons per day of carbon nanotubes.

“Our success could lead to significant economic growth for the state of Oklahoma, as well as help enable a key strategic initiative for our country – to stimulate domestic production of Li-ion batteries for electric powered vehicles and greatly reduce our dependency on foreign oil,” Arthur said.