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Article published Feb 1, 2007

Nanoscience infecting area economy

By Reuben Mees

Much like a virus - the smallest of all living organisms - nanoscience has been introduced into the Hattiesburg business climate and is now infecting the area's economy.

But unlike viruses, which usually bring ill effects, nanoscience - developing materials at the atomic and molecular level - is expected to be a much more beneficial infusion into the area's economic lifeblood, a local entrepreneur said.

"The power of nano is that a little bit can go a long way," said Joe Lichtenhan, president and co-founder of Hybrid Plastics, during the Mississippi Technology Alliance's Breakfast with an Innovator series Wednesday.

The company, which is built on technological advances the Kansas native made while working with the U.S. Air Force in 1991, was launched in 1998 with a \$2 million Advanced Technology Program grant from the National Institute of Standards. The headquarters were moved from California to Hattiesburg beginning in 2003.

The company's capital investment has risen from less than \$500,000 its first year in Hattiesburg to more than \$3 million in a 14,400-square-foot expansion this year, Lichtenhan said. The company employs about 30 people - 60 percent of whom have doctorates - with an average salary of \$75,000.

The company manufactures a product called POSS, or Polyhedral Oligomeric Silsesquioxanes, which is being used to improve numerous existing products and technologies such as fiber optic light generation, medical stents that support arteries from collapsing or heat resistance in plastics.

A silicon-based technology, it is much like its carbon-based counterparts - and the first new chemical feedstock since 1955 when DuPont discovered aromatic monomers, which are used to make polymers like Kevlar.

When introducing Lichtenhan, MTA President Randy Goldsmith compared him to Alexander Graham Bell when only a few hundred telephones were being used or Bill Gates when only a few thousand people were using Microsoft products.

"This technology provides a nucleus for new ventures and opportunities worldwide," Goldsmith said. "It will allow us to realize new products, new companies and new jobs and ultimately transform the economy of the entire area."

And much like the spread of a virus, which starts slowly and then accelerates, the impact of the technology will still take some time to reach its full potential, Lichtenhan said.

"When you're in a material-based business, it usually takes 13 to 17 years before you have a solid market capture," he said. "But if you look at some of the end users of our products you can see them inserting into the marketplace very quickly after it's been qualified."

The core of Lichtenhan's message to Mississippians: By exploring how nanotechnology can improve products, the state's entrepreneurs can get in on the cutting-edge technology and beat foreign competitors to market.

"If India or China can develop technology-based economies, why can't we do it Mississippi?" he asked.

Jimmy Odem, a Harrison County man who is looking to begin manufacturing plastic fishing lures and plugs, said he is interested in learning more to determine if the new technology can help his business.

"I'm interested in using Hattiesburg as a hub and even a place to manufacture my products," he said, noting that

he has been to Eastern Europe to look into possible manufacturing sites but would like to provide jobs locally. "I would like the polymer industry of this area to furnish the plastics I need to manufacture my fishing plugs whether I am able to use the nanotechnology or not."

High among Lichtenhan's considerations for locating in the area was the strong polymer science and chemistry programs at the University of Southern Mississippi. It is one of three locations in the nation recognized as the leading locations for polymer research.

"We felt the dynamics were right in Hattiesburg," he said, explaining that state and regional agencies work well together to support economic development opportunities.

He said developments such as the university's Innovation and Commercialization Park, which is under construction in northwest Hattiesburg and will provide an incubator where scientists can move an idea to the business world, are positive signs that the area is continuing to move in the right direction.
