



The birth of 'Flexicon Valley'?

Experts: Greater Binghamton poised to be a flexible technology hub

BY DEBBIE SWARTZ • STAFF WRITER • DECEMBER 1, 2008

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California's Silicon Valley and North Carolina's Research Triangle Park weren't built in a day.

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Successful hubs of new [technology](#) research and development require funding and collaboration.

The idea of transforming Greater Binghamton into "Flexicon Valley" -- a center of [flexible](#) technology development and manufacturing -- has been circulating for years among researchers at Binghamton University, Endicott Interconnect Technologies, Cornell University and other institutions and businesses as they work together to realize success with this state-of-the-art technology.

"You can't do it alone anymore," El Chief Technology Officer Voya Markovich said.

Lightweight electronic components, including material produced through a roll-to-roll manufacturing process, could be used in products ranging from solar cells to medical catheters.

Flexible electronic components use less power, weigh less, and are produced quickly and with less expense than current components, said Bahgat Sammakia, director of BU's Center for Advanced Microelectronics Manufacturing.

The market for such products, he said, is in the tens of billions of dollars. The technology is being developed around the globe.

"This would have a really broad impact on society," Sammakia said. "It's a wonderful new world we're starting."

Research and development

The development of products such as flexible solar cells at CAMM could make a significant economic impact on Greater Binghamton, said Seshu Desu, dean of BU's Watson School of Engineering.

Once pilot production is complete, he said, the technology will be transitioned to companies for manufacturing.

Those companies -- whether existing or start-up businesses -- would likely locate in Greater Binghamton since it already has the equipment necessary for production, Desu said.

"Not every company can put together a roll-to-roll facility," he said.

For a company to build its own, it would need at least \$15 million in equipment, said Desu, who is also head of BU's solar center, which recently received \$4 million in federal funding.

The development of flexible solar cells will be a boon in a nation that has put the development of alternative energy sources at the top of its list of priorities, he said.

"It really is the right opportunity and the right timing," Desu said.

At roughly 10 times the cost of obtaining energy from a utility company, purchasing solar power equipment is too expensive for many consumers, he said.

To develop flexible solar power cells and [storage devices](#), the cost would be high at first -- as it is with any new technological development. But that cost would decrease significantly if production were high enough, Desu said.

If the cost of purchasing and installing solar power equipment were similar to the cost of an individual's or company's utility bills, the sales of flexible solar cells would increase significantly, he said.

"In that sense, they're becoming much more affordable and penetration will be higher," Desu said. "The market potential for solar cells ... is significant if the cost is low."



Binghamton University Center for Advanced Electronics Manufacturing research engineer Joseph Steiner works in a clean room at the center's facility at Endicott Interconnect Technologies in Endicott. The clean room's lighting appears yellow because some colors, including blue, are harmful to materials used at the facility.

At CAMM, developing flexible electronic components – through roll-to-roll manufacturing and other [technologies](#) – into usable and relatively inexpensive products is a goal that should be realized soon, Markovich said. BU's Advanced Diagnostics Laboratory, with its \$15 million in equipment, also plays a role in making the area a successful flexible electronics hub.

Several companies, including Eastman Kodak and Corning, use the lab to test products, he said.

The first prototype products are scheduled to be completed by the end of 2009, Markovich said.

"This is one of the ways to compete with China," he said.

Assets and needs

Greater Binghamton has a variety of assets that make it ideal as a flexible technology hub, said Sammakia, who is also executive director of economic development and outreach at BU.

"The most important thing is the people," he said.

Many area workers have the expertise needed to develop commercial products from flexible technology, and the students, faculty and staff members at BU are an integral part of the technology's success, Sammakia said.

"This area has a very high ratio of inventors," he said.

Greater Binghamton also has the facilities needed for companies to research and develop products, Sammakia said.

The CAMM facility, on the Huron Real Estate Associates campus in Endicott, was created with government and private industry funding, he said, including \$23 million from New York, \$17 million from the federal government and \$20 million from industrial sources.

"There's no one company that going to come in and build it on their own," Sammakia said.

An example of a start-up company that has already taken advantage of the burgeoning technology is NanoMas Technologies Inc. in BU's Innovative Technologies Complex in Vestal.

NanoMas will use \$3.2 million in recently provided venture capital to further commercialize metallic particles used for printed [electronics](#), conductive pastes, solar cells and chip packaging.

The area's needs include an industrial park where BU and technology companies can interact and grow, Sammakia said.

"You see examples of that throughout the country," he said.

Another need is a regional economic development consortium instead of the many levels of municipal, county, state and other agencies, Desu said.

With so many, there isn't a coherent vision of what will grow the region, he said.

"You're not being focused," Desu said.

By having just one agency with a clear goal, those who seek to start a business or move a business to the area wouldn't have to meet with a dozen individuals at various agencies, he said.

"Why not have one Greater Binghamton economic development entity?" Desu asked.