

### NANOSI ADVANCED TECHNOLOGY

# Deal to help brighten cell-phone displays

## Champaign firm to work with manufacturer; technology boosts resolution, cuts power use

By **DON DODSON**

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CHAMPAIGN — A major manufacturer of LCD displays and touch panels for cell phones has signed a collaborative agreement with a Champaign firm to use silicon nanoparticle technology developed at the University of Illinois.

Wintek Electro-Optics hopes to use that technology to improve the resolution and brightness of its displays and to reduce power consumption associated with the devices, said David Ste-

venson, Wintek's director of North American operations.

The technology was developed by NanoSi Advanced Technology Inc., a firm founded by UI physics Professor Munir Nayfeh.

Stevenson and Nayfeh said that over the next 12 to 18 months, they'll seek ways to integrate the technology into Wintek's commercial production.

The silicon nanoparticles would be used as "seeds" in the production of high-mobility crystalline thin films.

Those materials, in turn, would be used in thin-film transistor liquid crystal displays (LCDs).

Taiwan-based Wintek makes LCD displays and touch panels for cell phones and other small electronic devices up to the size of tablet computers, Stevenson said.

"We need to improve the performance of the display in a significant way," he said, noting silicon nanoparticles might be one way to do that.

The technology could yield a 40 percent increase in brightness and twice the standard contrast ratio or resolution, he said.

Plus, "something on the order of 60



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percent power reduction is attainable," he added.

Wintek is also interested in the potential of silicon nanoparticles to increase the efficiency of solar cells, Stevenson said. That could be a boon for recharging phones

and other hand-held devices.

Stevenson said the industry became aware of NanoSi's technologies about three years ago. Wintek contacted Nayfeh, NanoSi's president, last summer and recently concluded an agree-

ment in principle.

"Our goal is to have it into commercial production in 12 to 18 months if we stay on point," he said.

Citing industry figures, Stevenson said about 1.2 billion cell phones were sold last year, with about 20 percent of those smart phones.

He figures 300 million to 400 million phones are candidates for enhanced displays, with 5 percent already having some display enhancement.

Currently, the industry relies on laser-scanning to help achieve high-performance displays, but that comes

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at high cost and requires large investment. But by sandwiching silicon nanoparticles in amorphous film, the company hopes to achieve a similar result at a fraction of the cost.

"I'm really excited about the relationship with Wintek," Nayfeh said. "I want to flood America and the world with nanoparticles, and maybe this is one way — through them."

Neither Stevenson, who is based in Ann Arbor, Mich., nor Nayfeh could say whether the agreement would result in more silicon nanoparticle production in Champaign-Urbana.

If only a modest investment is made, production could stay here. But if the application is big enough, the work may need to be done elsewhere.

"We haven't tried to nail it down pat. We're open to any of those options," Stevenson said.

Stevenson said although Wintek's production is done largely in China and Taiwan, U.S. and

European companies provide many of the materials used in LCD displays and integrated touch panels.

Corning is the predominant supplier of glass, 3M Corp. provides a lot of the optical films and Merck provides the liquid crystal fluid, he said.

Wintek Electro-Optics has worked as a "bridge" with academic researchers to help commercialize intellectual property, Stevenson said.

"We hope this becomes a poster-child example of how it can and should work," he said.