

Spin-off Company Helps Customers See the Light

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When University of Arkansas professor Xiaogang Peng developed a series of powerful methods for synthesizing high quality nanocrystals in solution, researchers began asking him for samples, so he and his co-workers decided to form a company that would both sell nanocrystals and explore the applications of his fundamental research.

Three years later, that company has attracted more than \$3 million in funding, including a new grant from the National Science Foundation to develop commercial-scale production protocols for magnetic ferrous oxide nanocrystals for potential use as biomarkers and another new grant from the National Institutes of Health for developing near-infrared probes for diagnostic purposes.

"Working with a company provides you with a link to the real world," said Peng, the Scharlau Professor of Chemistry and Biochemistry, who founded Nanomaterials and Nanofabrication Labs (NN-Labs) in 2002.

The company employs 11 people, eight of whom are University of Arkansas graduates.

"We need to provide people with working opportunities," Peng said. "The company is committed to maintain the manpower produced by the University of Arkansas."

Likewise, the university is keenly interested to support the formation of spin-off technology-based companies such as NN-Labs. As part of the

evolving business relationship, the university provides NN-Labs access to facilities and equipment, and to intellectual property. Peng and various members of his university research team, together in some cases with NN-Lab company employees, have made various product and method breakthroughs since 2000 that the university is patenting and, in turn, is licensing the rights to the company for commercialization. The patent portfolio includes two U.S. patents issued, seven U.S. patents pending, and 10 foreign patents pending.

While Peng studies the fundamental properties of nanocrystals in his university research program, the company seeks to find ways to make nanocrystals useful in everyday life. Nanocrystals vary greatly in their properties - particularly their optical properties -- depending upon their size.

This could make them useful in solar cells, which would be lighter than conventional solar cells and therefore more efficient for space exploration. Another use for nanocrystals might be to create thin, flexible displays for cell phones and watches. Because they are cheap, efficient and reliable, they also may be used in traffic lights in place of light bulbs, where they may last up to 1,000 times longer. And nanocrystals can be used as biomarkers or biosensors for diagnosis of cancer or for targeted drug delivery, said Yong-Cheng Liu, vice president for innovation and technology development at NN-Labs. It is this last possibility that has earned the company its latest federal funding.

The company has successfully bid for close to \$3 million in Small Business Innovation Research grants from the National Institutes of Health, the National Science Foundation and the Department of Defense, with 20 percent of the funding going to Peng's team at the university to support fundamental research.

"It's beneficial from both ends," said David Battaglia, who graduated

from Peng's lab with a doctorate in chemistry and is manager for technology and business development.

Battaglia became familiar with NN-Labs while doing his doctoral research, and the company also became familiar with his work, which made for a good match after he graduated. While graduate students are not involved in product development for the company, their fundamental research does aid the company in making decisions about which commercial avenues to pursue.

"Without the university, there would be no company like this," Battaglia said. High-tech companies require technology sources and laboratory space, both of which are available through a variety of technology promotion programs at the university, such as the Genesis Technology Incubator.

Source: University of Arkansas

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