

Nano Center Helps Crystalplex's Light Shine

By Kevin Lane

For Crystalplex CEO Matt Bootman, the Pennsylvania NanoMaterials Commercialization Center was just the catalyst that his start-up nanotech company needed to bring its intellectual property to light. Bootman's company develops and manufactures semiconductor nanocrystals, commonly referred to as quantum dots (QDs). Crystalplex's QDs provide high-performance, solid-state light emission for color display, general lighting and organic light-emitting diode applications. They also have application in photovoltaics.

Crystalplex's QDs employ a proprietary technology called Advanced Isolation Mechanism (AIM™). This new technology enables the emission of any desired light from a single light-emitting diode (LED) source and provides greater freedom of design in LED-based display backlights and lighting applications, and it does so more cost-efficiently than current methods. The AIM™ QDs improve stability and lifetime significantly when compared to standard phosphors and conventional QDs. They also eliminate the need for active-feedback color stabilization circuits and multiple LEDs to produce a desired light emission, thereby also reducing the cost of manufacturing. Current processes require wasteful dicing and binning operations which lead to higher manufacturing costs. Crystalplex's new AIM™ QDs eliminate this costly step, allowing faster adoption of more energy efficient LED's in displays and lighting.

In 2007, the Pennsylvania NanoMaterials Commercialization Center awarded Crystalplex a grant in the amount of \$220,000. This sum and other vital resources provided by the Center were used to achieve several critical milestones in commercializing Crystalplex's technology.

Funding was used to develop a prototype for use in demonstrating the AIM™QD technology to potential customers. Funding also was used in attempting to secure the necessary IP protection and patents for Crystalplex's proprietary AIM™ technology, and it enabled the company to employ two additional people since the grant was awarded.

But the Nano Center's contribution went beyond the awarding of a grant. It also offered significant technical assistance and advice in the field of optical polymers. In addition, it was instrumental in assisting Crystalplex to focus its strategic planning on the solid state lighting industry, and it was a catalyst for the company to form proprietary partnerships within the industry.

Although currently there are no supplier, commercial or joint development agreements in place yet, expectations are high for revenue streams to begin in 2010, says Bootman. And he remains high on the Nano Center, too.

"The Pennsylvania NanoMaterials Commercialization Center has been superior when compared to other state and federal agencies of its type," said Bootman. "The Center completely understands the challenges of small companies that have few resources other than their intellectual property. The terms of our company's award were structured in a way that was very advantageous for our future growth and expansion, and we believe it is a good model for small companies in the nanotech space."

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