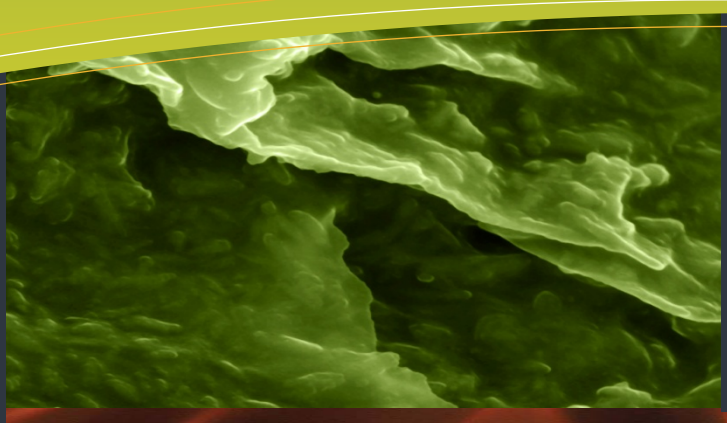
Pennsylvania NanoMaterials Commercialization Center

# NanoMaterials Quarterly

November 2010 Edition



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## REQUEST FOR PROPOSALS

### *"Commercializing Advanced Material Research"*

### Nov 1 – Jan 28, 2011

The Center is making available $980,000 in grant funds to PA-based university researchers, small and large companies. The funding supports the early stage commercialization efforts of advanced nanomaterials that have applications in *new* products and manufacturing processes in the commercial and defense sectors.

There are two categories of funding: $30,000 grants for fast-track pre-commercialization projects, and $200,000 grants for full commercialization projects.

The Center has developed a unique partner model that requires a collaboration arrangement between start-ups, industry and/or universities. The net result is that the commercialization efforts are supported by partners with experience that include the market, customer base and manufacturing and hence minimizing the risk factors to realize commercial success.

The Center has established partnerships with a wide range of university researchers, small and established companies, and entrepreneurs. If you are seeking partner/s for your technology development, the Center can offer assistance. Submit an Idea Brief.

NEXT STEPS

Submit an IDEA BRIEF. The Idea submission is a summary document describing (a) the uniqueness and market need for the technology and (b) an overview of the commercial plan to implement the proposed development. In response, the Center will provide written feedback on how well the project idea fits the Center's mission for funding.

The Idea Brief template is available on the website. Submissions will be accepted until Dec. 15 2010.

Attend a WEBINAR and learn more about the RFP process, proposal criteria and evaluation. For webinar dates, visit the Center's website.

CONTACT the Center: Leone Hermans – Blackburn, Program Manager and visit www.pananocenter.org.



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## Building Better Batteries: Penn State Researcher Has a New Idea!

The basic physics of an electric battery haven't really changed all that much in more than a century. It uses the movement of positive and negative ions to store an electrical charge, and it eventually wears out and needs to be replaced.

But what would happen, say, if a battery could hold a charge for an exponentially longer period of time? Not only that, but the charge it held could be more stable, more reliable, and more dependable.

And the best part? The technology that makes it all possible has a really cool collegiate name, as in the "Li-Ion" battery, developed at Penn State University, home of the Nittany Lions.

Led by Dr. Donghai Wang, the Penn State concept works at the atomic level to create a highly conductive surface area. This surface is a nanocomposite, which uses less carbon than typical battery technology. As a result, it is more conducive to high electronic activity. This makes it very well-suited for applications in supercapacitors, and for the end-user market of high-performance batteries. Wang's project has received financial and operational support from the Pennsylvania NanoMaterials Commercialization Center.

"The pre-commercialization project we're funding supports Dr. Wang and his researchers at Penn State to develop and commercialize an advanced graphene-based nanocomposite for electrochemical energy storage applications, such as the Li-Ion battery and supercapacitors," explained Dr. Alan Brown, Executive Director of the Center.

"The novel graphene-based nanocomposite will have high energy density and/or higher power in energy storage devices and it can also significantly improve electrode kinetic and cycling stability for energy storage techniques," Brown said. "The team's previous successful experience in technology commercialization will help accelerate the commercialization of graphene-based nanocomposites for electrochemical energy storage dramatically."

"Now, users must change batteries many times over many years," said Dr. Wang. "This technology offers improved stability, and can penetrate the high-performance battery market. We are moving toward commercialization, and the pre-commercialization project being conducted with the help of the Center is helping us to optimize completion of the technology's structure and performance". What's also needed for successful commercialization is to find ways to lower the cost of implementing and using this technology.

"The Center is supporting us with funding for research, materials, testing and optimization," Wang continued. "The Center also is giving us regular feedback and suggestions as we look at commercialization. They have provided valuable market research and analysis. It's a very good interface between academia and the marketplace.

"The Center also attracts funding from the U.S. Air Force Research Lab, opening doors to multiple government agencies and defense applications.", Wang said.

Wang has been working on this particular technology for more than three years, and the journey has been one of continuous discovery and advancement.

"Originally we had the basic nanotech concept, then discovered it could be used very well as battery materials," he recalled. "But as we worked with the technology in more detail, we then discovered its supercapacitor applications. Because we have received great feedback along the way, through working on this project, I've been able to pursue different angles to the work, other ways to think about approaches to move forward and to lower costs. It has been a very rewarding process."

Supported by a single undergraduate student and with access to graduate students as needed at Penn State, Wang voiced confidence that the Li-Ion battery technology has great potential to meet a need in the marketplace. "Ongoing assistance from the Center will continue to play an important role in that evolution, as well", he said.

"The Center has been very efficient," he noted. "They work closely with the university and work very hard to give us constructive feedback."

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## DIRECTOR'S COMMENTS:

Welcome to the Fall, 2010 edition of NanoMaterials Quarterly. The theme for this edition is how the Center engages more effectively with our clients and partner organizations to generate new ideas for collaboration and new product development based on nanotechnology.

To achieve more engagement we are more actively marketing our Fall/ Winter proposal round to ensure that we receive a wide range of innovative ideas and proposals. We are offering information on our website, holding face to face meetings, hosting webinars and communicating through e-mails and events. We strongly encourage all our partners to contact the Center, submit ideas, and discuss your thoughts for projects. For more details, see the link on the left of this newsletter.

Another key activity in how we more effectively engage with our network is expanding our contacts with other organizations in our region that have similar missions to ours. In addition to our ongoing discussions with Pittsburgh Tech Council, Catalyst Connection, The Tech Collaborative, and Innovation Works, we have initiated a dialogue with Idea Foundry and Blue Tree Angels. The overall goal of these contacts is how we can more effectively collaborate to better serve the high tech sector of our region. We all have the same mission of nurturing and supporting innovative ideas, entrepreneurs and existing company growth and economic revitalization. I strongly believe that collaboration between all the private and public organizations engaged in business and economic development in the region is the key to growing the high tech sector in Pittsburgh.

As always, I welcome your comments on ways we can more effectively serve all our existing and future partners of the Center.

Alan G. Brown
Executive Director

## NANO CENTER NEWS

### Center releases its summer economic impact results

The Pennsylvania NanoMaterials Commercialization Center has released its economic impact results from this past summer. The economic impact measures the economic growth the Center's portfolio companies have had for the State of Pennsylvania. (+)

### Strategic polymer sciences receives $1 million from department of energy to advance high performance energy storage for electric vehicles

Strategic Polymer Sciences (SPS) received a $1Million award from the Department of Energy (DOE). It is one of 33 companies across the nation funded as part of the DOE's Small Business Phase III Xlerator Program. SPS is an innovator in eletroactive polymer (EAP) technology and a PA Nano Center portfolio company. (+)

### Plextronics and Cambrios Collaborate on Improvements to OLED-based Solid-State Lighting through Department of Energy Assistance Agreement

Plextronics, Inc. and Cambrios Technologies Corporation announced that they have entered into collaboration to develop a cost-effective, high performance material that could improve the manufacturing process and quality of lighting products based on organic light emitting diodes (OLEDs). The collaboration is funded, in part, through an assistance agreement with the Department of Energy (DOE) Solid State Lighting (SSL) program. (+)