Carolina Consortium Promotes Photonics Technologies

Robert D. Guenther

There is a classic gap between research and the realization of commercial opportunity—often called the "valley of death." A new consortium of universities in the Carolinas intends to bridge that chasm through a collaborative effort aimed at commercializing photonics technologies.

Transforming research concepts into viable products has always been a challenge for scientists. However, the telecom bust of 2001 made it particularly difficult for optics researchers to convince investors of the value of photonics technologies. As anyone who works in the field knows, photonics encompasses much more than fiber optics—including high-intensity lighting, data storage, biochemical detection, high-powered lasers used for manufacturing, cancer-detection techniques, etc. Unfortunately, however, many investors are not so, well, enlightened.

Earlier this year, a large cluster of Carolina researchers and engineers announced their strategy for promoting the commercialization of optics-based technologies. The Carolinas Photonics Consortium (CPC) is a collaboration among researchers from North Carolina State University (NCSU), the University of North Carolina at Charlotte (UNCC), Western Carolina University (WCU), Clemson University and Duke University. With a heavy focus on research applications, the CPC will provide seed money to researchers from each campus. Its aim is to create start-up companies as well as to sell or license technologies to industrial firms. The funds will be awarded to researchers who submit competitive proposals. The areas of emphasis at the five campuses are:

- Clemson: Novel optical materials
- UNCC: Microoptics and modeling optical systems
- NCSU: Photonic devices, optoelectronic and semiconductor materials and information technology
- Duke: Biophotonics, nano- and micro-systems, nanophotonics and quantum optics and information
- WCU: Prototyping, testing and design expertise for rapid prototyping.

The Consortium encourages collaboration among the campuses, since each one brings its unique skills and expertise to the table. Moreover, the universities have the advantage of geographic proximity and synergy among the technologies they are working to develop. More than $300 million of state and federal funds have already been invested in the CPC campuses over the past four years, making the Consortium the largest concentration of photonics resources in the country.

"The Carolina Photonics Consortium has been very active in involving researchers across the five campuses and has moved quickly in establishing a strong collaboration," said Sarah Smith, director of sponsored programs for the University of North Carolina General Administration. "The region will see significant new business creation as a result of the CPC."

CPC initiated its first project proposal program in August 2007. The program will provide seed funding for one photonics-based project from each campus over the next 12 months. The Technology Entrepreneurship and Commercialization (TEC) program at NC State—which has been supporting technology migration from the lab bench to domestic and international markets for 13 years—will help the researchers in their efforts to commercialize their technologies and develop companies.

If the seed funds are used successfully, researchers will then take part in a Phase I program to create a prototype, develop a

business plan and interact with potential customers. A few of these projects will move to Phase II funding to support initial product production, entity formation, technology licensing and the creation of a management team.

Consortium organizers anticipate that 50-75 seed projects will lead to 15-20 maturation projects and 2-4 new companies each year. The economic impact in the region will be a combination of new jobs, an increased tax base, new companies and license revenue for the universities. The unique structure of the Consortium will also attract additional external research. Through its efforts, the CPC hopes to make the Carolinas the top photonics region in the world by 2015.

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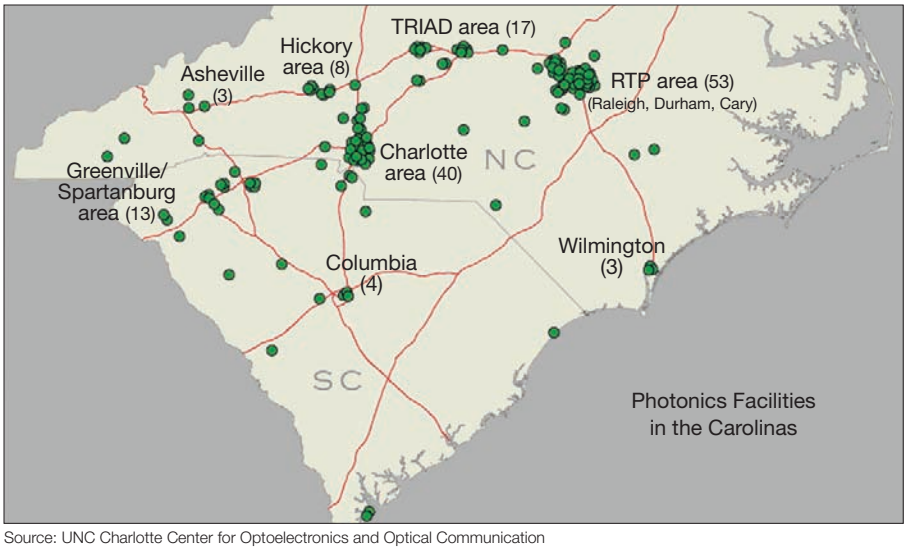
The Consortium sponsors regular events for the academic photonics community as well as industry colleagues. For example, in November, Nobel laureate William D. Phillips—who discovered how to cool and trap atoms with laser light—delivered a keynote speech at UNC Charlotte's Center for Optoelectronics and Optical Communications. CPC is also encouraging the development of a photonics cluster in the Carolinas to increase interactions among the photonics industries in the region.

In addition, members of the Consortium are developing photonics-based educational materials for potential use at local universities, community colleges and high schools. The Carolinas Photonics Consortium Web site—www.carolinasphotonics.com—provides links to local industries, jobs postings and quick links to the CPC campuses.

Each of the five consortium members has nationally respected programs in photonics. NCSU's strengths are in photonic devices, optoelectronic and semiconductor materials and information technology. The Center for Optoelectronics and Optical Communications at UNC at Charlotte has a core competency in microoptics and the modeling of optical systems. Western Carolina's Center for Rapid Product Realization provides prototyping, testing and design expertise for new product scale-up. The Fitzpatrick Institute for Photonics at Duke has research programs in biophotonics, nano- and micro-systems, nanophotonics and quantum optics and information. Clemson's Center for Optical Materials Science and Engineering Technologies is focused on the development of novel optical materials.

"The range of this group is impressive," said CPC Interim Director Jeff Conley. "I really think the field is ready to break into all sorts of areas."

[Robert D. Guenther (guenther@phy.duke.edu) is an adjunct professor of physics and electrical engineering at Duke University.]



Source: UNC Charlotte Center for Optoelectronics and Optical Communication