



LASERS AND FIBER OPTICS REGIONAL CENTER-- PROJECT SUMMARY

NEED FOR THIS PROJECT: Lasers and fiber optics (LFO) are advanced technologies enabling complex, sophisticated, and very expensive instrumentation used in the biomedical field, life sciences, remote sensing, and information technology. The United States commands global leadership in these lucrative technologies, producing high-wage jobs in the U.S. An August 2012 report published by the National Academy of Sciences, "*Optics and Photonics: Essential Technologies for Our Nation*", states that \$4.9 billion worth of laser sales enabled \$7.5 trillion of the U.S. gross domestic product in 2009 and 2010.⁶ These are the technologies the U.S. should pursue in order to remain the world leader in the design, manufacture and export of technologically superior systems. A study conducted by the University of North Texas in June 2012, identified an annual national need of 1,592 technicians in the LFO field while the present output of U.S. colleges is only 350.¹ The same study indicates that in the southeast region we must increase the present output of LFO technicians by 300% to meet industry demands. There is obviously an urgent need to ramp up the production of LFO technicians to satisfy the high demand, maintain our world leadership, and create more high-paying jobs here at home.

PRIOR PROJECTS AND RESULTS: Indian River State College (IRSC) has been a partner of OP-TEC, the NSF/ATE National Center for Optics and Photonics Education and has graduated 126 LFO technicians since 2005. During this collaboration with OP-TEC, IRSC authored educational modules in the areas of optical imaging and solar energy technology. IRSC is also closely collaborating with Corning Fiber Optical Systems for training on the latest fiber optic technologies. From our close work with employers of this industry, we found that employers prefer hiring local talent because of the high turnover rate they experienced with technicians hired from out of state. It is therefore logical to establish LFO training at colleges located in close proximity to employers.

PROJECT PLAN AND GOALS: A regional laser and fiber optic technology center will be established to serve the following states in the southeastern United States: Florida, Georgia, Alabama, Mississippi, Tennessee, Kentucky, South Carolina, and North Carolina. With the assistance of an NSF planning grant (NSF/DUE 1104077), we have developed a network of 10 colleges and more than 253 companies that will participate in this regional center which has the following goals:

1. Study the specific technician needs of the laser and fiber optic industry in the southeast region and establish training programs and strategies, priorities and timelines to satisfy these needs.
2. Identify the specific area of focus for each partner college and create training programs for it.
3. Expand the coalition of partner colleges with LFO training programs to meet industry needs.
4. Enlist faculty and industry representatives to provide advice and direction for the Center's activities.
5. Create an outreach education program for middle and high school science teachers, counselors and administrators.
6. Recruit and assist returning veterans and minorities to enter LFO programs in the southeast U.S.

INTELLECTUAL MERIT: All principal partner colleges have a proven record of creating successful LFO programs, some of which are more than 25 years old. Principal Investigator (PI) Dr. Chrys Panayiotou has been successfully involved in the development of the National Center for Optics and Photonics Education (NSF/DUE 0603275). The IRSC laser photonics program and the PI received national awards, and have been recognized in national publications. Co-PI Mr. Gary Beasley chairs the OP-TEC Photonics College Network and has collaborative ventures with many colleges across the nation, especially in the southeast U.S. Co-PI Dr. Gaby Hawat created the first Lasers-photonics academy in a Florida high school with support from industry. Co-PI Dr. James Pearson is the executive director of the Florida Photonics Cluster, a trade association of 57 members (41 companies, 9 university organizations, 7 economic development organizations) and with contacts with the regional photonics industry, which has 310 companies from the LFO sector.

BROADER IMPACT: This Regional Center will help maintain the United States' world lead in the field of lasers and fiber optics, which is vital to our leadership in the advanced instrumentation of life sciences and information technology. LFO technicians' starting salaries are well above the national average, thereby elevating the graduates' socioeconomic status. Activities of the Regional Center will offer a broad LFO education infrastructure that will be available to the southeast U.S., and enhance and promote the fields of science, technology, engineering and mathematics. The partnerships created by the educator and employer network will have a beneficial and lasting effect not only to the local region but to the entire nation. The PI, as member of the advisory board of the Gender Equity Cooperative, an NSF project, will organize events aimed at attracting more women and minorities into this program. By participating in the VRAP program and starting a cohort of veterans enrolled in the Laser Photonics certificate program at IRSC will further assist our returning veterans. This continuing initiative will be duplicated at our partner colleges.