

Richard Blackmon Sheds New Light on Kidney Stone Treatment

Richard Blackmon is in his third year as a doctoral student in Optical Science and Engineering at UNC Charlotte, in the College of Engineering. His research lies amongst a common ailment for many individuals – treatment of painful kidney stones. Blackmon explores the use of the Thulium Fiber laser to improve currently used therapeutics for treating kidney stones. Without making incisions, laser light is guided through an optical fiber via an endoscope, to treat the stones found in a urinary tract. The Thulium Fiber laser uses much smaller optical fibers, thus taking up far less room than standard lasers. In addition, the laser uses five times less energy.

“I have been interested in the medical field but always excelled in math based sciences,” says Blackmon. “Working in the Biomedical Optics Laboratory at UNC Charlotte has shown me that my skills and interests can complement each other. I am very interested in the latest breakthroughs using optics in Oncology. Lasers can be used to detect and treat various forms of cancer and I hope to continue using Optics to improve and develop treatments for cancer.”

Blackmon received the 2010 NSF Graduate Research Fellowship, consisting of \$30,000 plus \$10,500 cost of education allowance for 3 years. In addition to his research, he has been a Teaching Assistant at the University, where he instructed “Introduction to Engineering” for the Department of Engineering. He has also served as a Research Assistant at NC State.

Blackmon received his Bachelor of Science in Electrical Engineering in 2009 from UNC Charlotte. He received his Associate of Science in 2006 from Gaston College in Dallas, NC. Prior to graduate school, Blackmon worked at Ceval Specialties in Mount Holly, North Carolina as a Plant Operator.

Other honors:

First Place in Non-Industrial Senior Design Competition at UNC Charlotte (05/2009)

“Most Outstanding Service Project” award from Leadership Academy (04/2009)

“Certificate of Appreciation” from Catawba Lands Conservancy (04/2009)

“Most Entertaining Award” from IEEE SoutheastCon robot competition (03/2009)

Peer Reviewed Journal Articles:

"Comparison of Holmium:YAG and Thulium fiber laser lithotripsy: ablation thresholds, ablation rates, and retropulsion effects"

"Holmium:YAG ($\lambda=2,120\text{nm}$) Versus Thulium Fiber ($\lambda=1,908\text{nm}$) Laser Lithotripsy"

"Thulium Fiber Laser Lithotripsy Using Tapered Fibers"

Activities and Societies:

2010-2011: President of OSA and Vice-President of SPIE 2011-2012: President of OSA and SPIE