



# University of Pittsburgh

ID: 3693

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## Fiber Optic Light Cable Safety Cover

*Preventing Fires and Burns in the Operating Room*

### Value Proposition

For surgeons and hospitals who do robotic, laparoscopic or endoscopic surgery, the risk of an unattended high-intensity light cable resulting in burns and fires continually exists—and until now was subject to human error. The Fiber Optic Light Cable Safety Cover is a simple, inexpensive and nearly-foolproof solution to the risk of heat-related adverse events in endoscopic surgery. Importantly, it requires no change in the surgeon's usual workflow. This is not like cable caps that require someone to remember to replace and remove them with every scope change, and the often constant admonitions to turn off the light source whenever the cable is detached. Instead, this device obviates human error by creating a *passive* heat and light shield whenever the cable and endoscope are separated.

### Market Opportunity

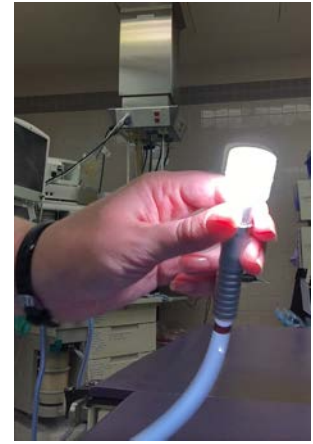
Approximately 7 million robotic, laparoscopic and cystoscopic/endoscopic procedures are performed in the US every year, each carrying the risk of thermal injury. Medical institutions have paid damages for light cable burns to patients resulting from human error.

### Competitive Landscape

There is no other passive solution to the risk of light cable burns in the market—the only commercial solution available requires the distraction of active placement by the surgeon or assistant.

### IP Landscape

Provisional application for patent was filed February 26, 2016.



Cable detaches normally; the cover prevents heat transmission and provides a bright reminder to power down.

### Technology

We have developed a cover for the fiber optic cable that 1) prevents high intensity light from escaping the cable when the instrument is removed and 2) thermally insulates the tip to prevent direct contact with the patient's skin and surgical drapes. The fiber optic cover is an inexpensive simple plastic device that fits snugly over the free end of any fiber optic cable. The device can be pre-sterilized and can be placed onto the cable during pre-surgery preparations. Once in place, the cable functions exactly as it did originally – that is, the surgeon will not need to handle the cable any differently than before. But when the cable is disconnected, the cover prevents high energy light from escaping the tip and creating a hazard.

### Stage of Development

Prototype tested for heat transmission/usability.

### Funding

Development funded through a University of Pittsburgh Center for Medical Innovation Early Stage Medical Technology Research and Development Pilot Funding Grant, 2013-2015 and through the Innovation Institute First Gear program.

# FEATURED INVENTORS:

## *Steven G Docimo, MD*

Dr. Steven Docimo is professor of urology at the University of Pittsburgh School of Medicine. He received his MD from the Johns Hopkins University School of Medicine and urological training in the Harvard program at the Brigham and Women's Hospital. After serving as a urologist in the United States Navy, he completed pediatric urological training at the Johns Hopkins Hospital. He left Johns Hopkins as Professor of Urology to serve as Chief of Pediatric Urology and the founding program director of the Pediatric Urology Fellowship at the University of Pittsburgh School of Medicine. He has authored more than 300 publications, many relating to minimally invasive surgical techniques. Since 2007 he has served as the Chief Medical Officer of the Children's Hospital of Pittsburgh of UPMC where he oversees Quality and Patient Safety.

## *William W Clark, PhD*

William W. "Buddy" Clark, PhD, is a Professor of Mechanical Engineering and Materials Science at the University of Pittsburgh's Swanson School of Engineering. He earned his BS, MS and PhD degrees in mechanical engineering from Virginia Tech. He has been on the faculty at Pitt for 20+ years where his primary research and teaching interests are in the area of dynamic systems, measurement, and control. He has advised 10 PhD and 23 MS students and has authored over 120 technical papers. Dr. Clark has a great deal of experience in developing measurement and mechatronic devices for medical and other commercial applications, with particular emphasis on inertial measurements and energy harvesting devices.

## *Alexandra Delazio*

Alexandra Delazio is a Senior in the University of Pittsburgh's Swanson School of Engineering pursuing a degree in Bioengineering with a concentration on Medical Product Engineering and a minor in Mechanical Engineering. Upon graduation, her ultimate goal is to enter into industry to design and develop medical devices and rehabilitation technology that will improve the quality of life of others.

## *John A Holmes*

J Andrew Holmes is a Journeyman Machinist Instrument Maker. He received an Associate Degree in Machine Technologies from the Community College of Allegheny County (1985) and served a four-year state recognized Journeyman Apprenticeship program with Gatan, Inc of Warrendale, PA (1983-1986). He has worked in the University of Pittsburgh Department Of Physiology, Department of Surgery, and currently is the manager of the Swanson Center for Product Innovation in the Swanson School of Engineering.

## *Benjamin Ristau, MD*

Dr. Benjamin Ristau is a Urologic Oncology fellow at Fox Chase Cancer Center in Philadelphia, PA. Upon graduating from Furman University in Greenville, SC, he participated in a 1-year Cancer Research Training Award Fellowship at the National Cancer Institute. Subsequently, he received his MD from the University of Connecticut School of Medicine and completed a six-year residency in Urology at the University of Pittsburgh Medical Center. Dr. Ristau has authored more than 25 peer-reviewed journal articles, editorials, and book chapters. He is currently pursuing a Master's degree in Health Administration from the Fox School of Business at Temple University with a focus on healthcare quality and patient safety.

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