



Distributed temperature monitoring using IOS' OFT sensor in thermal therapies. The illustration shows how the OFT could be used in enlarged prostate (BPH) treatment.

Intelligent Optical Systems (IOS) has developed an Optical Fiber Temperature (OFT) probe that will provide 10 points of high resolution temperature data in a single fiber. The OFT probe is an efficient alternative to thick bundles of arrayed single point temperature probes and expensive MRI thermometry instruments. This new probe will provide a realistic, cost effective, and efficient technique for distributed temperature monitoring and profiling in treated tissues. Use of the OFT probe can reduce complications as a result of excessive heat exposure and damage to the healthy tissue surrounding a tumor. Natural force and intracavitary treatments will benefit from the OFT's in-situ temperature profiling. IOS has demonstrated measurement temperature accuracy of 0.2°C at 10 points along a 5 cm optical fiber.

APPLICATIONS & BENEFITS

As microwave hyperthermia becomes increasingly popular for the treatment of benign prostatic hyperplasia (BPH) and other benign or malignant tumors, IOS' optical fiber temperature probe will be an integral part of the instrumentation required for effective treatment. The OFT provides multipoint, self-calibrating temperature sensing with high accuracy. Other non-invasive, multipoint thermometric medical applications that are accessible via narrow pathways will benefit from the development of this device.

- Measures tumor temperatures at multiple points along a 5 to 10 cm sensor length, with the ability to pinpoint target areas within 0.5 cm
- Monitors these temperatures over a large range, including the desired 35°C to 55°C range, with a 0.1°C temperature resolution
- Readily interfaces with clinical hyperthermia catheters because of its small size (0.25mm thick) and thus will be adaptable to a variety of clinical conditions
- The interface provides a user friendly temperature display