

System for Tracking Sharps and Tools in the Operating Room

Tech ID: 19174 / UC Case 2008-171-0

BACKGROUND

Instrument tracking and inventory control are burgeoning areas in hospital device development as safety initiatives and economic pressure for improved efficiency prompt hospitals and their insurers to develop improved means to satisfy rapidly evolving criteria. By combining expertise and observation in the operating room (OR) with chemistry and nano-engineering advances outside the OR, UC inventors have developed a proprietary, automated system that can scan and control a wide variety of materials that are routinely used in the surgical theater.

TECHNOLOGY DESCRIPTION

The identification system relies on reading and classifying the pattern and fluorescence spectrum of nano-quantum dot-based “tags” which are detected as each surgical material is transferred to a receptacle, such as a container or a tray. This approach immediately provides three distinct competitive advantages over alternative solutions, such as radio frequency identification (RFID) and bar code systems. First, RFID/bar code systems are not compatible with the environment of the OR, which requires fast and sensitive detection in the milieu of body fluids. Secondly, the combination of printed optical patterns and fluorescence spectra facilitates the identification of millions of different items. Finally, alternative approaches lack the dual ability to (i) prepare surgical tray instruments and (ii) scan and track instruments as they are used.

APPLICATIONS

A proprietary system comprised of a device, novel coding materials, and software enables efficient scanning, tracking, and inventory of diverse surgical tools, including both disposable (sharps and sponges) and re-usable instruments found in an operating room. One of many configurations would use unique tags to identify each type of object (e.g., scalpels, needles, sponges, and scissors).

ADVANTAGES

A prototype can be directly translated to a commercial product with the following advantages:

- ▶ Easily adapted into any hospital setting, worldwide.
- ▶ Safety and regulatory concerns will sustain this as a high-growth area.
- ▶ Device uses optical technology that is readily available.
- ▶ Simplified workflow can increase efficiency for OR staff and reduce the frequency of errors and injury.

STATE OF DEVELOPMENT

Early proof of concept prototype with key components and basic software tested for simple tracking of needles. Specifications for all system components have been assessed against functional requirements in the OR and initial studies are in progress to optimize and refine the current system using multiple labeling inks, necessary optics, and associated software algorithms.

INTELLECTUAL PROPERTY INFO

U.S. rights available for licensure

RELATED MATERIALS

Cited references represent an overview of the health care needs that are driving various initiatives in the surgical tracking field. Our system represents an alternative, flexible answer to these pervasive and persistent issues.

- ▶ [Tracking System Keeps VA Medical Center's Operating Room on Schedule.](#)

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OTHER INFORMATION

KEYWORDS

tracking, inventory, sharps, operating, operation, OR, surgery, surgical, instrument, device, needle, scalpel, blade, instrument tracking, inventory control, identification, RFID, quantum dot, nano

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Devices
 - ▶ **Nanotechnology**
 - ▶ NanoBio

RELATED CASES

2008-171-0

▶ Farag, A.A. et al., [Real-Time Vision-Based Approach for Probe Tracking in Operating Room](#), Elsevier International Congress Series,

Volume 1268, June 2004, Pages 467-472.

▶ [Greenville Hospital Deploys Integrated RFID Solution for Operating Room Asset Tracking](#).

▶ [Sterile Instrument Tracking System \(SITS\)](#).

▶ [New Technology for Tracking Surgical Instruments, Sponges During Surgery – VIDEO](#).

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,019,078	04/28/2015	2008-171

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ [Structure Based Design of Anti-Parkinson's Disease Compounds Targeting Synuclein Oligomerization](#)

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