

FLEXIBLE WOUND HEALING MONITOR

Tech ID: 23607 / UC Case 2014-059-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,463,293	11/05/2019	2014-059

BRIEF DESCRIPTION

Pressure ulcers are formed when constant pressure or rubbing results in breakdown of the skin. Hospitals and nursing homes spend billions of dollars each year to prevent formation of pressure ulcers in their patients, as many current solutions (pressure-distributing beds, re-positioning patients every few hours, etc.) are very expensive and labor-intensive. Additionally, chronic cutaneous wounds affect millions of people each year, costing billions of dollars to treat. These ailments represent critical, unmet needs in clinical medical practice, and result in increased morbidity and mortality at a high human and financial cost.

In response to this challenge, investigators and University of California, Berkeley have developed a flexible wound healing monitor. As an objective measurement, wound progression is monitored remotely. Otherwise undetectable features are identified visually. The flexible wound healing monitor uses impedance spectroscopy to measure and characterize tissue health, allowing physicians to identify high-risk areas of skin to prevent formation of pressure ulcers or to objectively monitor progression of wound healing.

Uniquely, the flexible wound healing monitor takes measurements across nearest neighbor electrodes in an array to create a visually intuitive map of electrical impedance. Data visualization is through a map resembling the electrode array. Spaces between every two electrodes are filled with a color corresponding to the impedance magnitude or phase as determined by an intuitive color scale.

The flexible wound healing monitor can be integrated into the Wound VAC, a current standard-of-care wound treatment. In addition, impedance measurements taken at high-risk sites can allow for early detection of impending pressure ulcer formation. First prototypes of the flexible wound healing monitor were fabricated on rigid FR4 printed circuit boards. The investigators are transferring this technology onto a flexible substrate using inkjet printing of conductive metal ink.

APPLICATIONS

- monitoring wound healing
- prevention of pressure ulcers
- monitoring internal wounds
- detecting granular tissue formation

ADVANTAGES

- flexible, skin-surface conforming
- objective, remote wound monitoring
- constant monitoring of dressed wound
- visually intuitive data
- inkjet printing fabrication

CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.



INVENTORS

- » Maharbiz, Michel M.

OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
 - » Remote Sensing
- » **Medical**
 - » Devices
 - » Diagnostics
 - » Research Tools
 - » Therapeutics
- » **Semiconductors**
 - » Design and Fabrication
- » **Sensors & Instrumentation**
 - » Biosensors
 - » Medical
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RELATED CASES

2014-059-0

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Systems For Pulse-Mode Interrogation Of Wireless Backscatter Communication Nodes](#)
- ▶ [Woven Fabric Bioelectronic Device](#)
- ▶ [Thin-Film Optical Voltage Sensor For Voltage Sensing](#)



University of California, Berkeley Office of Technology Licensing

2150 Shattuck Avenue, Suite 510, Berkeley, CA 94704

Tel: 510.643.7201 | Fax: 510.642.4566

<https://ipira.berkeley.edu/> | otl-feedback@lists.berkeley.edu

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