

High Density Micromachined Electrode Arrays Usable for Auditory Nerve Implants and Related Methods

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BACKGROUND

Auditory prostheses using microelectrode arrays suffer from a number of limitations. Issues that were not resolved are electrode size, the need for electrical wires to communicate with and transfer power to the arrays, and the need for hand assembly of the devices.

TECHNOLOGY DESCRIPTION

Researchers at the University of California have developed an auditory implant prosthesis consisting of a form-fitted microelectrode array and on-chip wireless circuitry. Key advantages of this invention include an improved process to fabricate the custom designed circuitry and electrodes. Accurate and secure placement of the implantable electrodes on the auditory nerves is achieved by employing a geometry that complements the curvature of the nerve surface. By eliminating multiple long interconnections between electrodes and signal processing circuits, reliability and functionality are improved. Wireless telemetry and power delivery to the implant greatly enhances usability and implant duration. Furthermore, wireless telemetry reduces the risk of infection frequently observed with implantable electronic devices that require the use of transdermal wires.

APPLICATIONS

This invention can be utilized to restore hearing functions in severely to profoundly deaf patients. The device's wireless telemetry and electrode array design can also be applied to other neuronal prostheses including retinal and vestibular implants. Additionally, the device can also be used for research purposes to stimulate and record nervous system impulses in electrophysiological and behavioral animal experiments.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,991,475	08/02/2011	2005-423

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OTHER INFORMATION

KEYWORDS

auditory prosthesis, deafness

CATEGORIZED AS

- » **Medical**
 - » Devices
 - » Disease: Central Nervous System
 - » Rehabilitation
- » **Research Tools**
 - » Other

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