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Intraocular Pressure Sensor

A novel, less than one-millimeter, wirelessly rechargeable sensor provides continuous, high-sensitivity monitoring of internal body pressure with autonomous data transmission.

Intraocular pressure sensors seek to help glaucoma patients by facilitating better control of intraocular eye pressure. In order to cause the least amount of discomfort to the user, it is important to make these devices as small as possible. Current pressure sensor technologies measure a centimeter in their largest dimension and are passive rather than active, requiring an external source of power for operation.

Researchers at Purdue University have developed a novel intraocular pressure sensor that measures less than one millimeter in all dimensions and delivers active, programmable, physiological sensing with high sensitivity. The device is wirelessly rechargeable permitting around the clock autonomous operation with pressure data collection as often as once every five minutes. Once a day the data is automatically uploaded to an external device and transmitted to a physician. Following transmission, the implant is recharged. The entire process takes less than one second.

Advantages:

-Size is less than one millimeter

-Recharges wirelessly

-Data automatically transmitted to physician and then recharges

-Transmission and recharging takes less than one second

Potential Applications:

-Eyes

-Heart

-Vasculature

-Cerebrospinal Fluid

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Category
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-Silicon implants for sensing rupture of implant

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Intellectual Property:

Provisional-Patent, 2011-10-12, United States | Provisional-Patent, 2012-10-11, United States | PCT-Patent, 2012-10-12, WO | NATL-Patent, 2014-04-11, United States | CON-Patent, 2017-03-21, United States | CON-Patent, 2020-01-30, United States | CON-Patent, 2022-10-19, United States

Keywords: Intraocular pressure sensor, glaucoma treatment, active physiological sensing, wirelessly rechargeable sensor, autonomous operation, millimeter scale device, implantable pressure monitor, ophthalmic sensing, miniature biomedical sensor, cardiovascular sensing