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Scientists in Japan develop prosthetics for retinal stimulation

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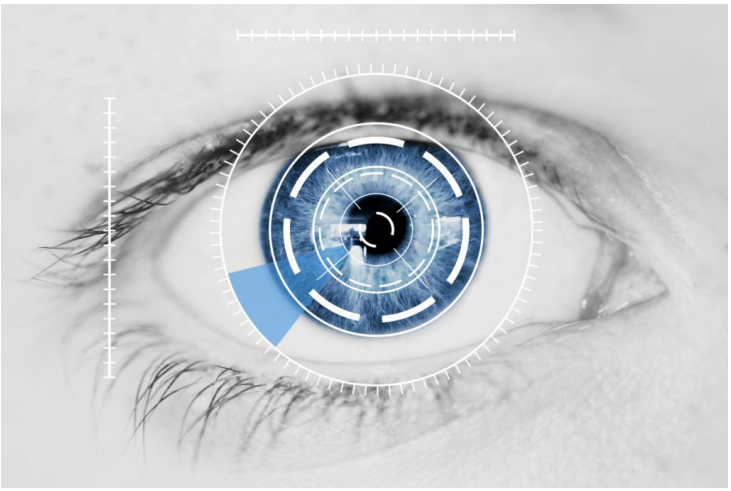
OUReP is a photoelectric dye-coupled thin film device that generates electric potential changes when exposed to light



In a study recently published in *Advanced Biomedical Engineering*, researchers at Okayama University in Japan report a thin photoelectric film which can stimulate degenerated retinal tissues of the eye.

Using electric signals to stimulate tissues is the basis of several medical devices such as pacemakers for the heart or neurostimulators used for patients suffering from epileptic fits.

A research team led by Dr. MATSUO toshihiko at Okayama University has developed OUReP^{TM}, a photoelectric dye-coupled thin film device that generates electric potential changes when exposed to light. In their latest study, the research team reveals the ability of this device in stimulating degenerated retinal tissues.

OUReP^{TM} is generated by placing polyethylene, a polymer, between two aluminum plates. When the polymer is melted, and a high pressure applied subsequently, a fine polyethylene film is created. The film then undergoes a chemical reaction wherein it is coupled to a photoelectric dye.

"The current study provides direct evidence for the ability of the photoelectric dye-coupled polyethylene film to elicit electroretinogram-like response and action potential spikes in degenerative retina," conclude the researchers. Retinitis pigmentosa, is one such condition, wherein photoreceptors of the eye slowly die, leading to blindness. This study revealed the prosthetic value of OUReP^{TM} in potentially replacing the lost photosensitivity of these cells. Implanting the device and testing visual enhancement in animals in their preceding studies have already given further insights.