

# Intelligent wireless theranostic contact lens for electrical sensing and regulation of intraocular pressure

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Engineering wearable devices that can wirelessly track intraocular pressure and offer feedback-medicine administrations are highly desirable for glaucoma treatments, yet remain challenging due to issues of limited sizes, wireless operations, and wireless cross-coupling. Here, we present an integrated wireless theranostic contact lens for in situ electrical sensing of intraocular pressure and on-demand anti-glaucoma drug delivery. The wireless theranostic contact lens utilizes a highly compact structural design, which enables high-degreed integration and frequency separation on the curved and limited surface of contact lens.

The wireless intraocular pressure sensing modulus could ultra-sensitively detect intraocular pressure fluctuations, due to the unique cantilever configuration design of capacitive sensing circuit. The drug delivery modulus employs an efficient wireless power transfer circuit, to trigger delivery of anti-glaucoma drug into aqueous chamber via iontophoresis. The minimally invasive, smart, wireless and theranostic features endow the wireless theranostic contact lens as a highly promising system for glaucoma treatments.

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