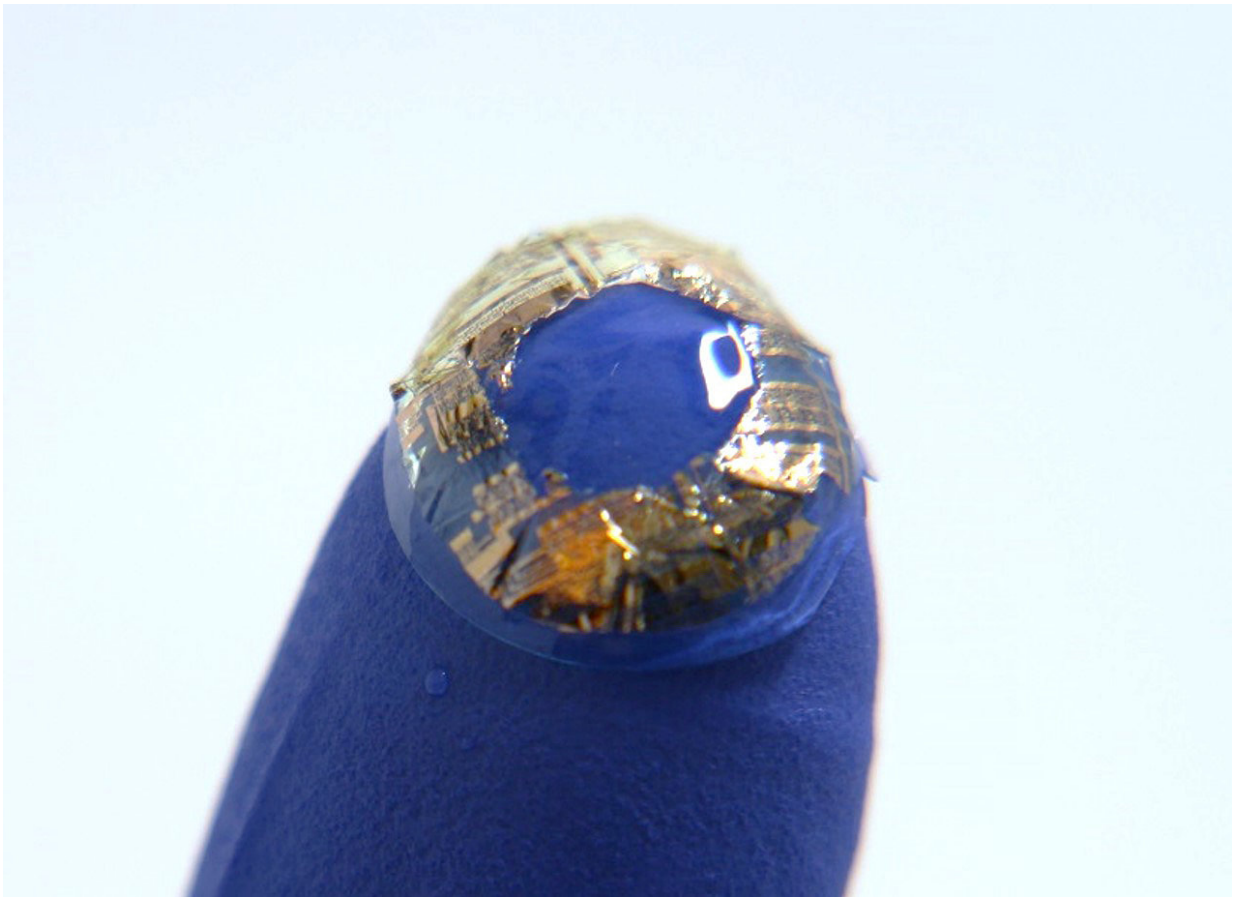


# Technology enables soft contact lenses to monitor glucose, medical conditions and deliver medications

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Purdue University researchers combined a commercial soft contact lens with an ultrathin conformal sensor circuit. Credit: Purdue University

Purdue University researchers have developed soft contact lenses that not only correct vision but also can monitor glucose and medical conditions and be used for ocular pain relief or drug delivery.

Sensors or other [technology](#) previously couldn't be used for [soft contact lenses](#) because the technology required a rigid, planar surface incompatible with the soft, curved shape of a contact [lens](#).

The Purdue University team, led by Chi Hwan Lee, an assistant professor of biomedical engineering and mechanical engineering, created a novel method for attaching sensors and other small devices to soft contact lenses.

"We developed a very unique technology that enables the integration of thin film sensors with a commercially available soft contact lens," Lee said. "These current hydrogel-based contacts serve as the perfect platform for smart lens systems due to their high degree of comfortability, biocompatibility, breathability and long-term wearability. Before our discovery, it was challenging to fabricate high-performance electronics on commercially available soft contact lenses."

The [sensors](#) embedded on the soft contact lens detect the levels of glucose, lactate and pH value in a continuous manner, providing information associated with diabetes, hypoxia and underlying ocular tissue health. With the ability to combine soft, silicon-based contact lenses with a variety of different semiconductor devices, numerous advanced eye care applications are now possible.

"This technology is highly novel and will significantly expand the functionality of existing soft contact lenses," Lee said. "This technology will also form a basis to further extend the functionality of the smart soft contact lens system for many other envisioned applications, including controlled release of ocular drugs, eye-wearable night vision and

augmented reality."

Provided by Purdue University

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