
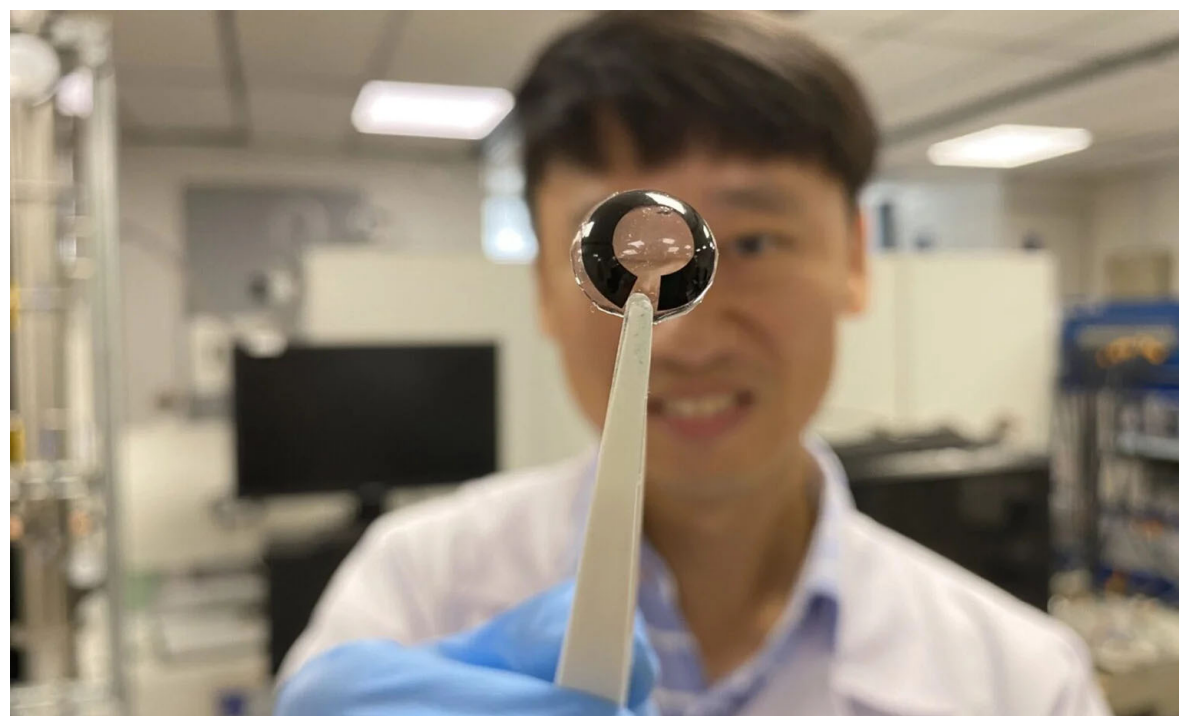


NEWS

Meet The Smart Contact Lenses Powered By Tears

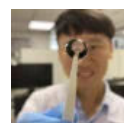


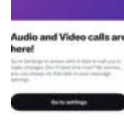

Researchers in Singapore have revolutionized the humble contact lens with self-charging smart capabilities.


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 By **Nour Nasir**



NTU Singapore

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Contact lenses have been used to successfully correct vision for decades, but recently, they're beginning to evolve into something much more interesting.

Researchers from the Nanyang Technological University (NTU) in Singapore have developed a tiny micrometer-thin battery that can power futuristic smart contact lenses that rely on the wearer's tears for power.

Although smart contacts are nothing new, most attempts so far have relied on thin batteries with tiny induction coils and wires. Obviously, these metal parts aren't ideal for a device that sits directly on the wearer's eye, so an NTU School of Electrical and Electronic Engineering (EEE) research team led by Lee Seok Woo has been working on something better.

According to a [press release](#), the NTU team's battery uses biocompatible materials coated with a glucose-based layer. The coating reacts with the sodium and chloride ions present in the battery to generate electricity. Since both sodium and chloride ions are also found in tears, the smart lens battery can also be recharged while in use with no additional effort from the wearer.

Speaking about the research, Lee Seok Woo said, "This research began with a simple question: Could contact lens batteries be recharged with our tears? Previous techniques for lens batteries were imperfect, as one side of the battery electrode was charged, and the other was not. Our approach can charge both electrodes of a battery through a unique combination of enzymatic reaction and self-reduction reaction".

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According to the NTU team, the lenses should be good for a full day of use, and can also be placed in a special solution that keeps the battery charged. "By combining the battery and biofuel cell into a single component, the battery can charge itself without the need for additional space for wired or wireless components. Furthermore, the electrodes placed at the outer side of the smart contact lenses ensure that the eye's vision cannot be obstructed".

The NTU scientists are already working on boosting the amount of electricity the lens battery can deliver. Their research has been published in the journal Nano Energy, and they're also in the process of partnering with contact lens producers to bring the technology to the market.

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