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Scientists develop skin sensor to monitor health

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Scientists at the University of Tokyo, Japan have developed a hypoallergenic, breathable sensor that can be worn on the skin continuously for a week without discomfort, and may pave the way for wearable devices that can monitor health continuously over a long period.

Wearable electronics that monitor heart rate and other vital health signals have made headway in recent years, with next-generation gadgets employing lightweight, highly elastic materials attached directly onto the skin for more sensitive, precise measurements.

Although the ultrathin films and rubber sheets used in these devices adhere and conform well to the skin, their lack of breathability is deemed unsafe for long-term use.

Dermatological tests show the fine, stretchable materials prevent sweating and block airflow around the skin, causing irritation and inflammation.

Researchers developed an electrode constructed from nanoscale meshes containing a water-soluble polymer, polyvinyl alcohol (PVA), and a gold layer - materials considered safe and biologically compatible with the body.

The device can be applied by spraying a tiny amount of water, which dissolves the PVA nanofibres and allows it to stick easily to the skin - it conformed seamlessly to curvilinear surfaces of human skin, such as sweat pores and the ridges of an index finger's fingerprint pattern.

The researchers next conducted a skin patch test on 20 subjects and detected no inflammation on the participants' skin after they had worn the device for a week.

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