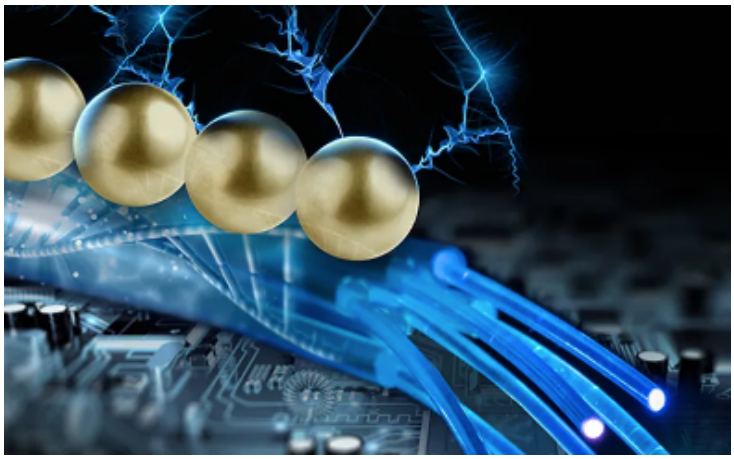
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ASIA EDITION

Korea highlights golden future of wearable devices in healthcare

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A novel approach to develop intelligent healthcare sensors using various gold nanowires



A research team from the Department of Materials Science and Engineering at Pohang University of Science and Technology (POSTECH), South Korea has developed an integrated wearable sensor device, using various shapes of gold nanowires, that effectively measures and processes two bio-signals simultaneously.

While silver (Ag) nanowires, known for their extreme thinness, lightness, and conductivity, are commonly used in wearable devices, the team fused them with gold. Initially, they developed bulk gold nanowires by coating the exterior of the silver nanowires, suppressing the galvanic phenomenon. Subsequently, they created hollow gold nanowires by selectively etching the silver from the gold-coated nanowires. The bulk gold nanowires responded sensitively to temperature variations, whereas the hollow gold nanowires showed high sensitivity to minute changes in strain.

The team’s sensors exhibited remarkable performance in detecting subtle muscle tremors, identifying heartbeat patterns, recognizing speech through vocal cord tremors, and monitoring changes in body temperature. Notably, these sensors maintained high stability without causing damage to the material interfaces.