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A flexible conductive hybrid elastomer for high-precision stress/strain and humidity detection

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Flexible and environment-responsive materials are essential for a large number of applications from artificial skin to wearable devices. The present study develops a flexible, ultra-low cost conductive hybrid elastomer (CHE), which possesses high responsive capabilities to stress/strain and humidity. CHE was composed of polydimethylsiloxane (PDMS) and starch hydrogel (SH), enabling great elasticity (56 kPa), high conductivity (10^{-2} S/m) and high sensitivity to external stimuli (gauge factor of CHE under stress and strain are 0.71 and 2.22, respectively, and sensitivity to humidity is 1.2×10^{-6} S/m per RH%). These properties render CHE a promising candidate for

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