

Mechanically and electrically durable, stretchable electronic textile for robust wearable electronics

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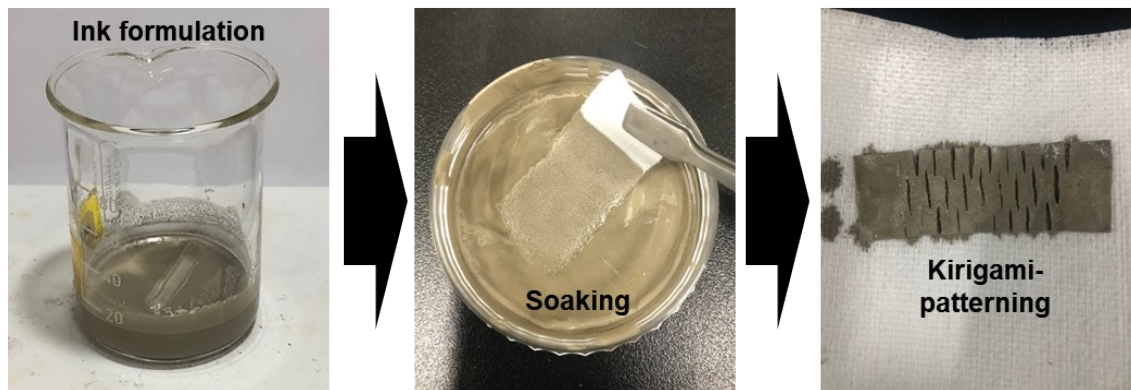


Figure S1. Fabrication process for the kirigami-inspired MED-ET. Ag flakes and the synthesized self-healing polymer were mixed in 4-methyl-2-pentanone for 1 h. Subsequently, the polyurethane fabric was soaked in ink. After drying for 1 h, we patterned the fabric in a kirigami shape.

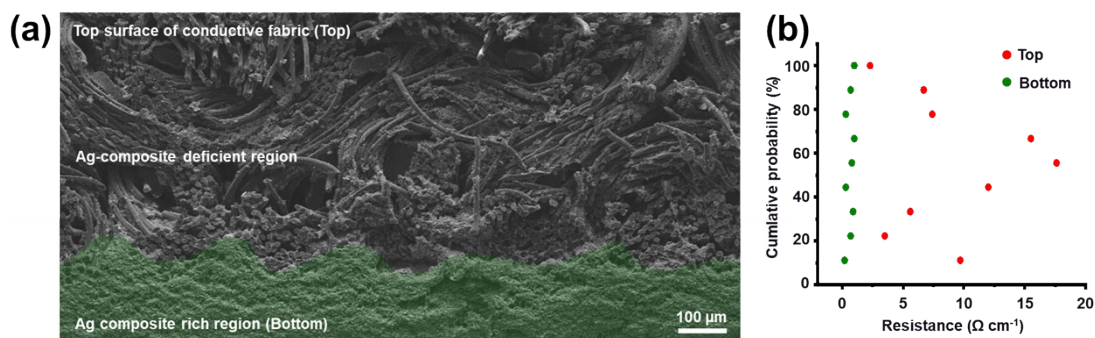


Figure S2. Ag composite rich region of conductive fabric. (a) Cross-sectional SEM image of the Ag composite rich region which formed by sinking of Ag ink induced by gravity. (b) The resistance variation of both side of surfaces of conductive fabric. The Ag composite rich region (Bottom) shows good uniformity compared to top surface of conductive fabric

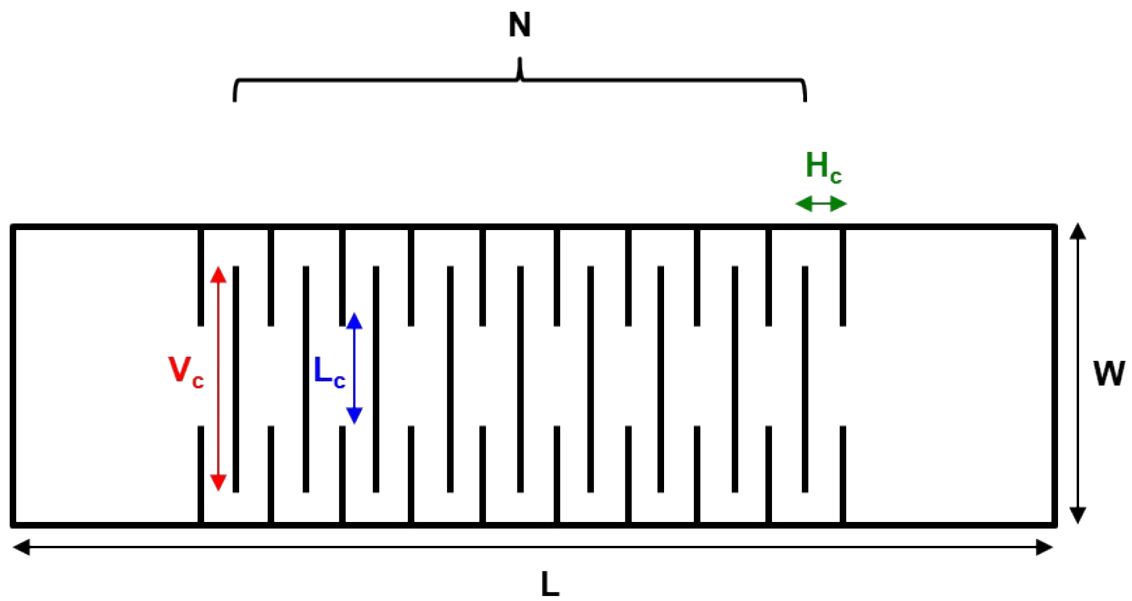


Figure S3. Schematic illustration showing size of kirigami-inspired pattern. The kirigami-inspired pattern consists of W (width), L (length), V_c (vertical cut-spacing), H_c (horizontal cut-spacing), L_c (center cut length) and N (number of cuts)

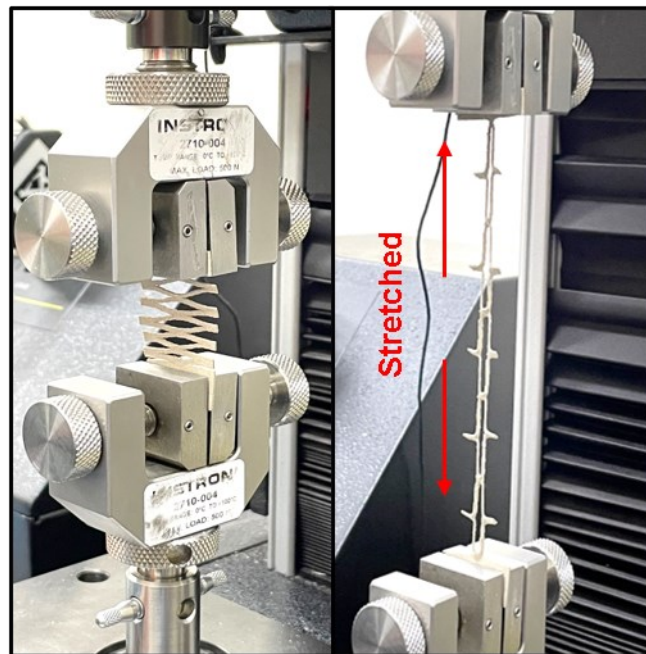


Figure S4. Strain–stress test of conductive fabrics. Photographs of the MED-ET before stretching (left) and showing high stretchability at 400% stretching (right) in an Instron machine.

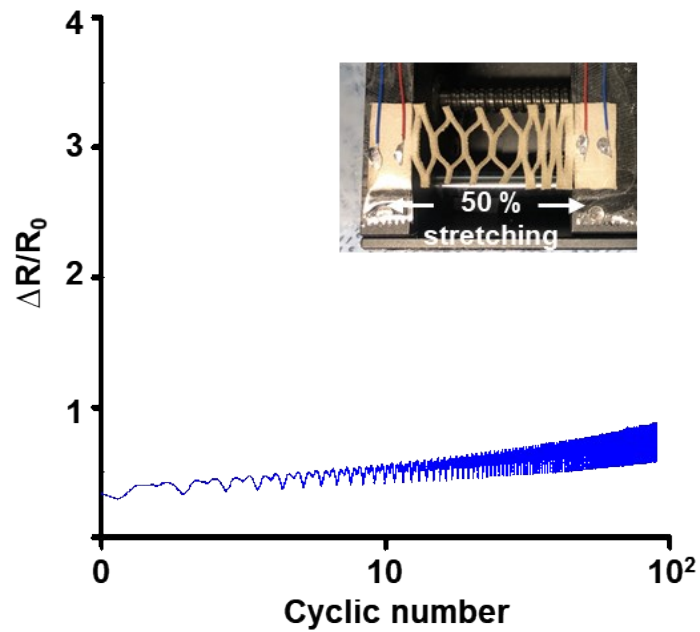


Figure S5. Cyclic test of the kirigami-patterned conductive fabric at 50% strain To verify electrical and mechanical stability of the kirigami-patterned conductive fabric under more harsh condition, the cyclic test was performed at 50 % strain

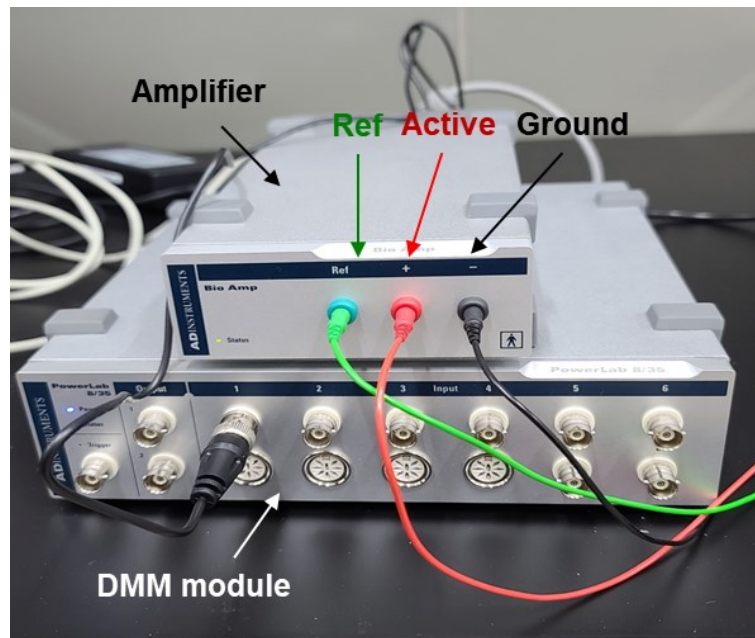


Figure S6. Setup for EMG measurements. Data acquisition device (DAQ) module and amplifier for EMG demonstration.