Supplementary Material for:

Inkjet-Printed Flexible Piezoelectric Sensor for Large Strain Applications

Giulia Mecca[1], Roberto Bernasconi[1], Valentina Zega[2], Raffaella Suriano[3], Marco Menegazzo[4], Gianlorenzo Bussetti[4], Alberto Corigliano[2], Luca Magagnin[1]*

[1] Dipartimento di Chimica, Materiali e Ingegneria Chimica "Giulio Natta", Politecnico di Milano, Via Mancinelli 7, 20133, Milan, Italy

[2] Dipartimento di Ingegneria Civile e Ambientale, Politecnico di Milano, Piazza Leonardo da Vinci 32, Milano 20133, Italy

[3] Dipartimento di Chimica, Materiali e Ingegneria Chimica "Giulio Natta", Politecnico di Milano, Piazza Leonardo da Vinci 32, Milano 20133, Italy

[4] Dipartimento di Fisica, Politecnico di Milano, Piazza Leonardo da Vinci 32, Milano 20133, Italy

E-mail: roberto.bernasconi@polimi.it

Figure S1 represents the XRD spectra of the Kapton substrate used during the experimentation.

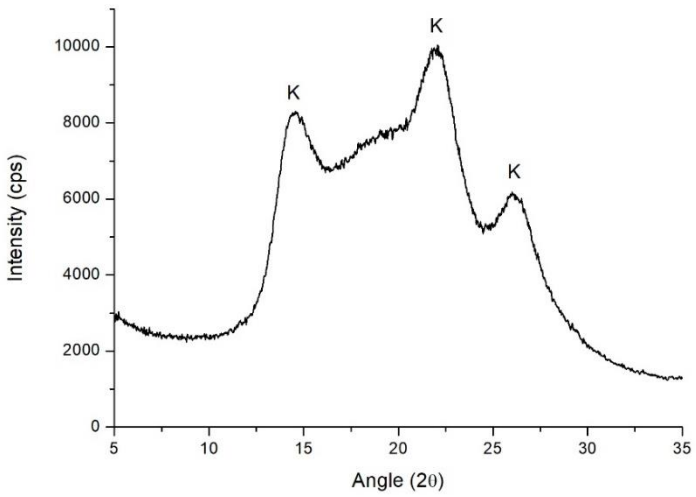


Figure S1. XRD of the Kapton substrate.

Figure S2 visually depicts the effect of the plasma treatment on the wettability of the Kapton substrate.

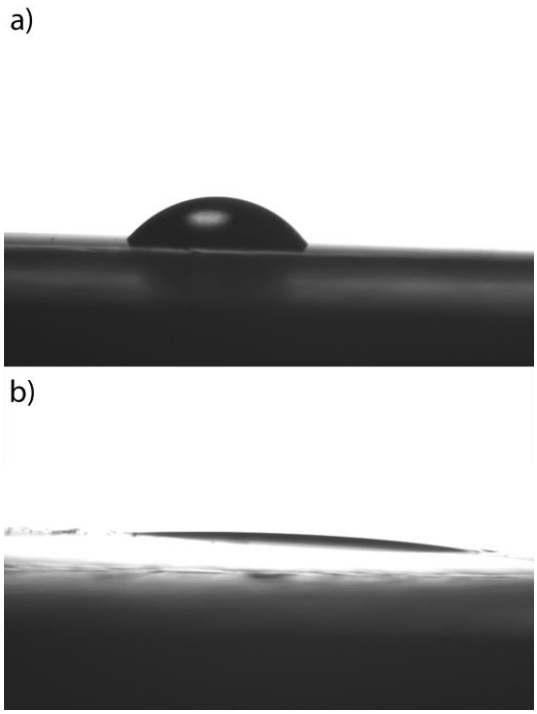


Figure S2. Contact angle measurement on Kapton substrate before plasma treatment (a); contact angle measurement on Kapton after three minutes of plasma treatment (b).

Figures S3 and S4 report the XRD analysis conducted on the printed silver electrode before and after the annealing process, respectively.

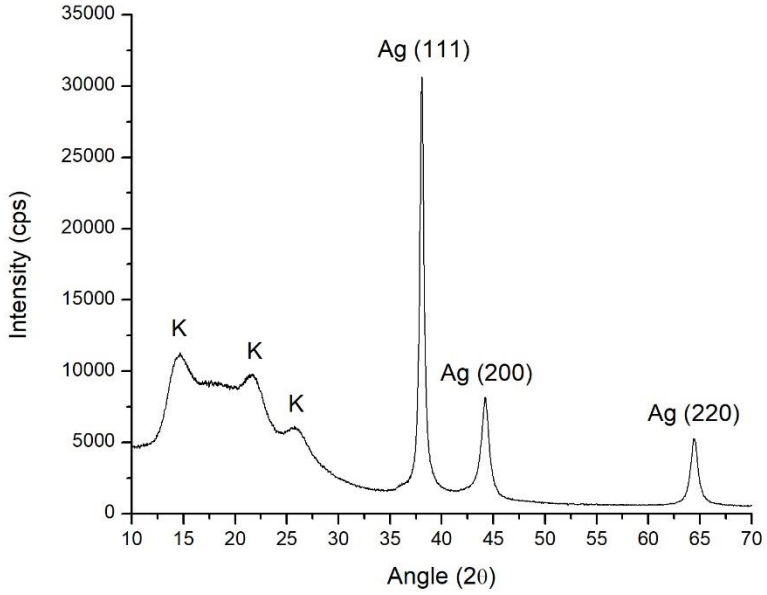


Figure S3. XRD of the as-printed Ag electrode

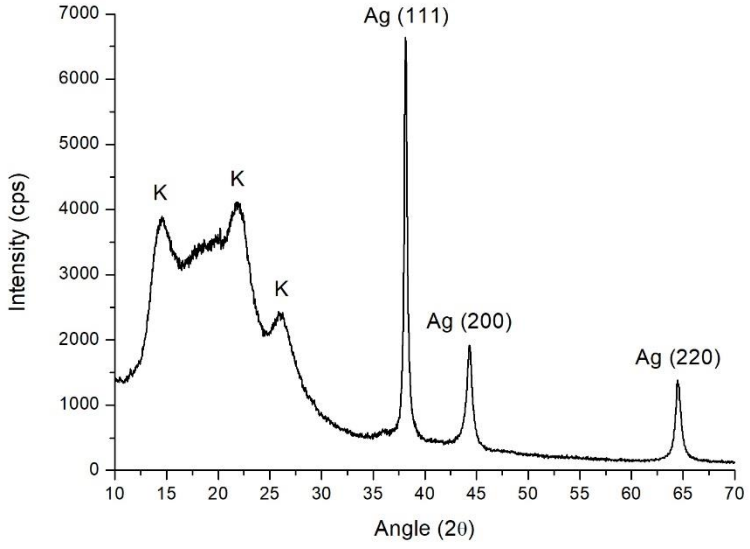


Figure S4. XRD of the annealed Ag electrode

Figure S5 shows the SEM of the surface of a sensor folded at 180°.

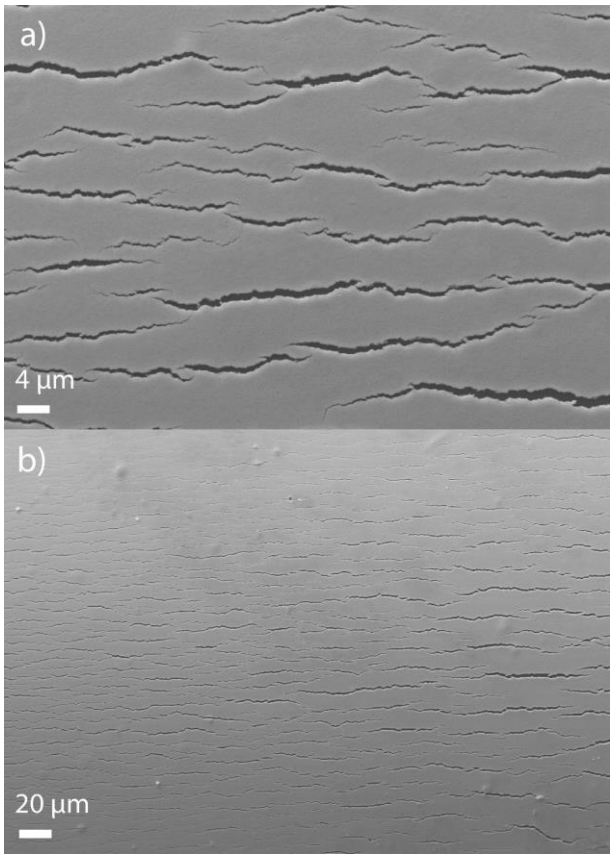


Figure S5. SEM analysis of the top electrode after being abruptly bent.

Figure S6 shows the SEM cross-section of a sensor whose active layer has been printed with non-optimized parameters.

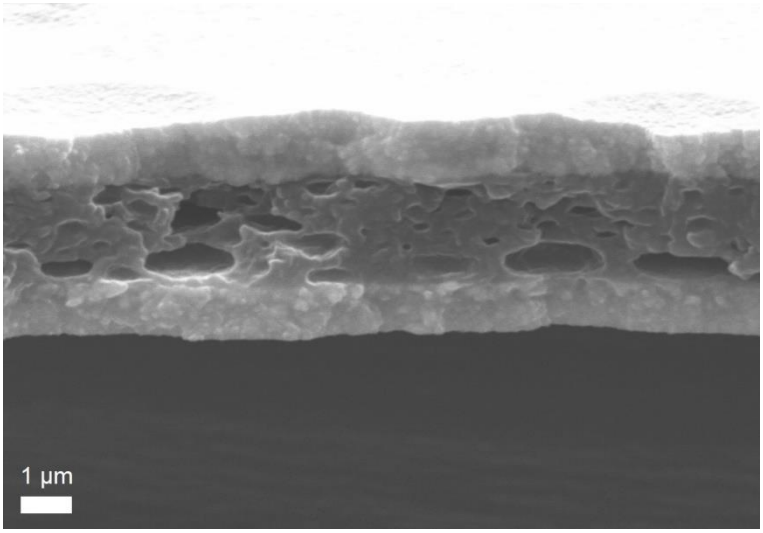


Figure S6. SEM image of a highly porous P(VDF-TrFE) layer between two Ag electrodes.

Figure S7 depicts the setup used for the cyclic bending tests.

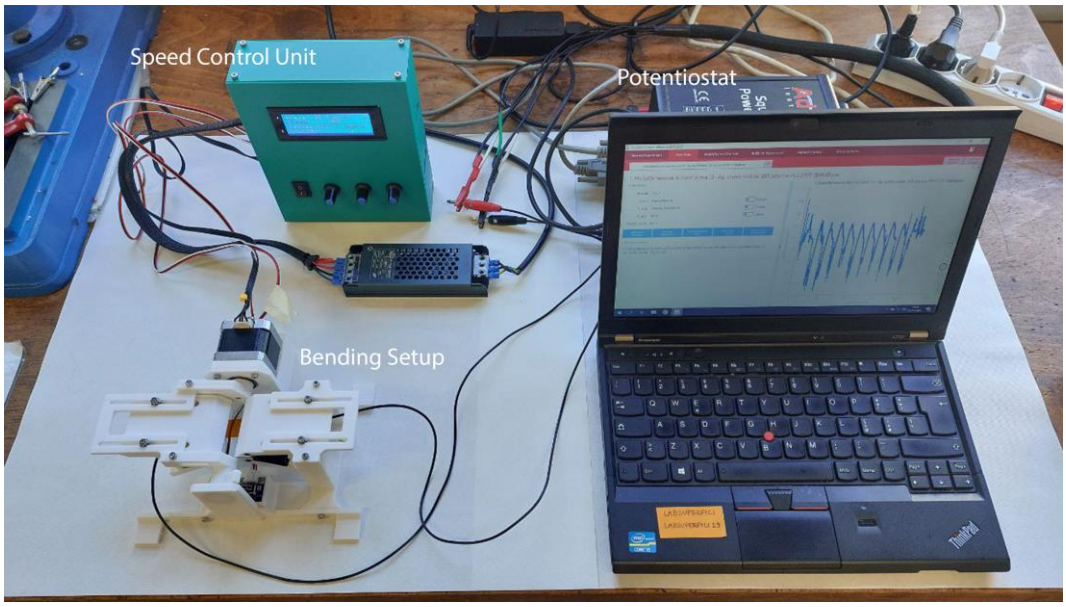


Figure S7. Actuation setup.