Electronic Supplementary Material (ESI) for RSC Advances.
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Supporting Information

All-organic, conductive and biodegradable yarns from core-shell nanofibers through electrospinning

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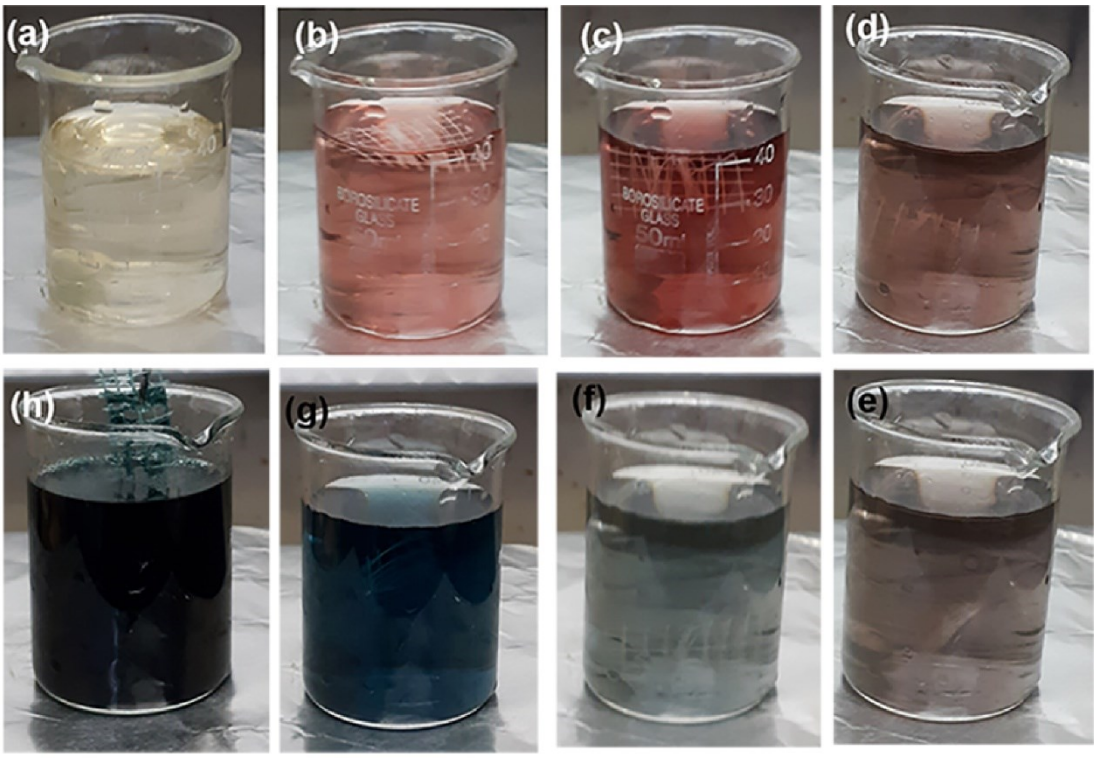

Fig. S1: Color change of aniline reaction mixture by adding APS. (a) The starting colorless reaction solution, (b - after 60 s) the PCL yarn skein became pink color. The high intensity pink (c-after 90s) gradually reduced and turned into (d- after 120 s and e – after 150s) violet color. (f- after 180 s) The yarn was transformed to blue. (g) After 4 min induction period, the homogeneous solution was transformed into heterogeneous dark blue precipitate. (h) After 10 min of reaction time, the yarn skein and polyaniline precipitated in the solution to become dark green in color.

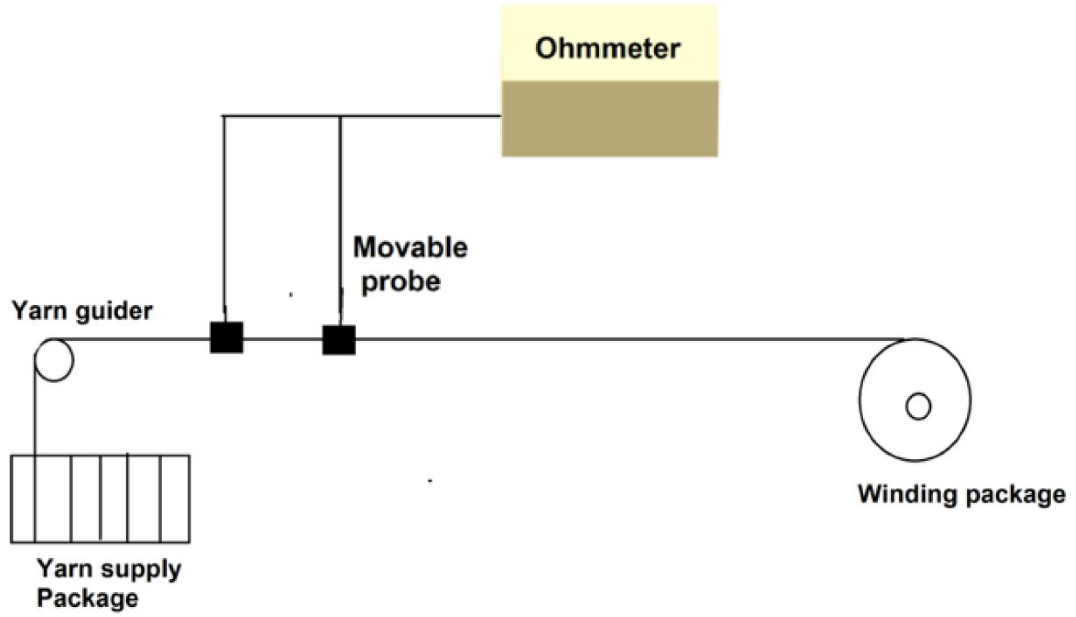

Fig. S2: Schematic diagram of test circuit for measuring resistance of the yarn with the two-probe method using multimeter.

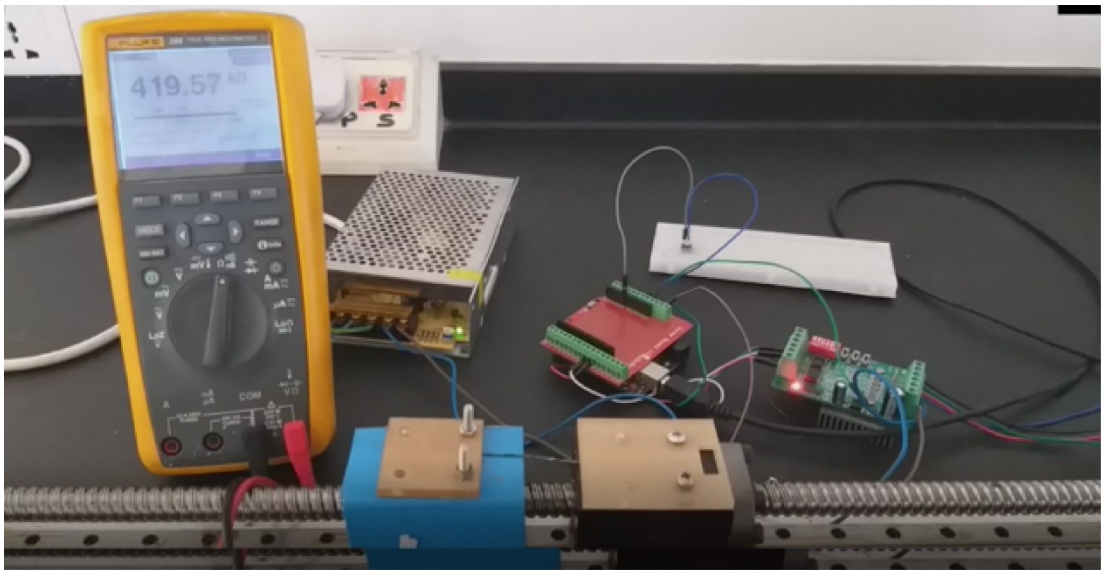

Fig. S3: Homemade apparatus for measuring resistance vs strain. The yarn was clamped in 4 cm distance and a constant load was supplied with a known constant rate. Therefore, strain could be calculated with respect to time. The resistance of the yarn was also measured and saved with respect to time using a multimeter (Fluke 289 True-RMS Data Logging Multimeter). At the end, data was presented as a plot of resistance versus strain.

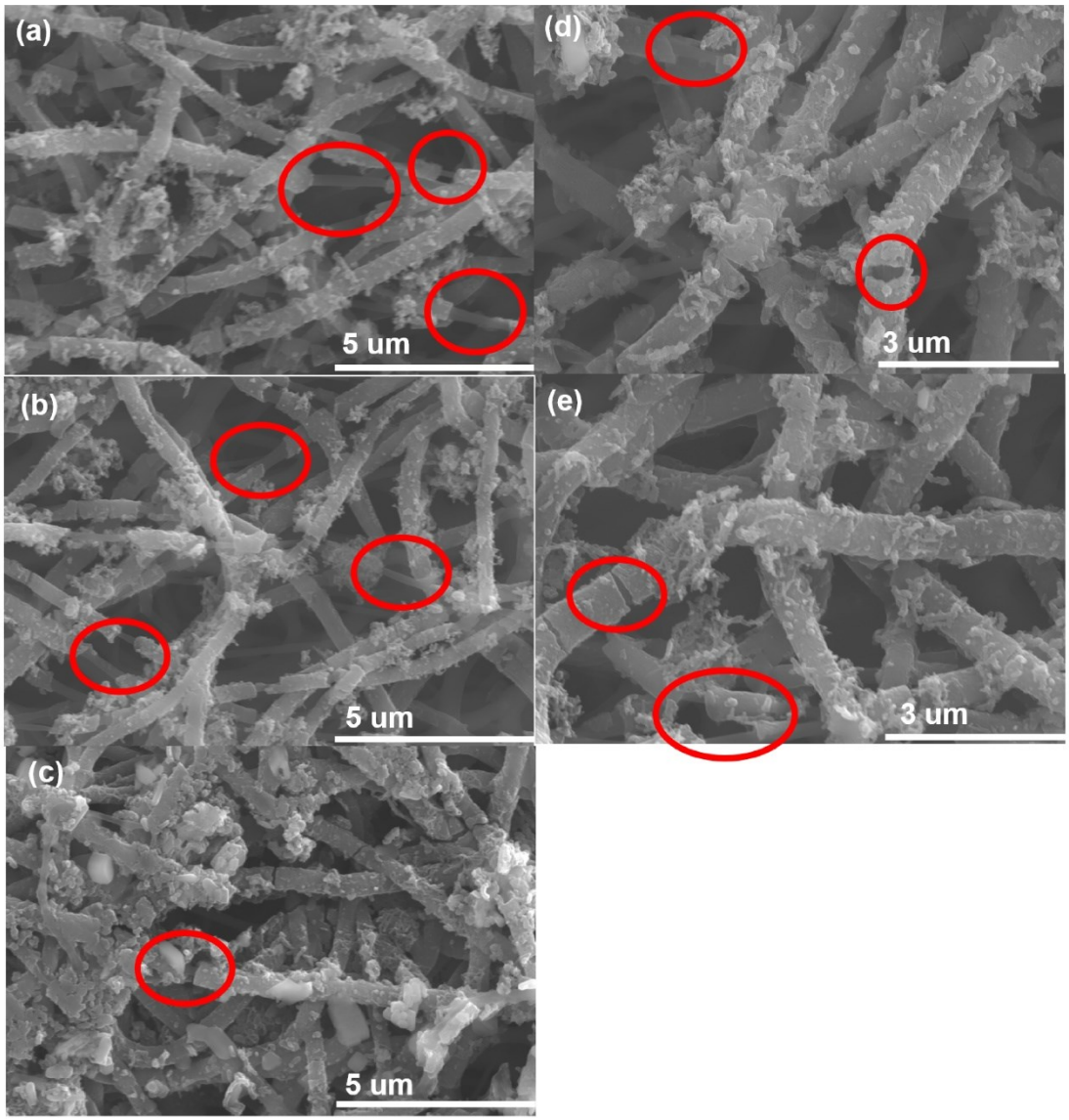

Fig. S4: PANI decorated PCL nanofibers with core-shell structure. SEM image of (a) 1% aniline, (b) 1% aniline, (c) 2% aniline, (d) 1% aniline magnified image and (e) 1% aniline magnified image.

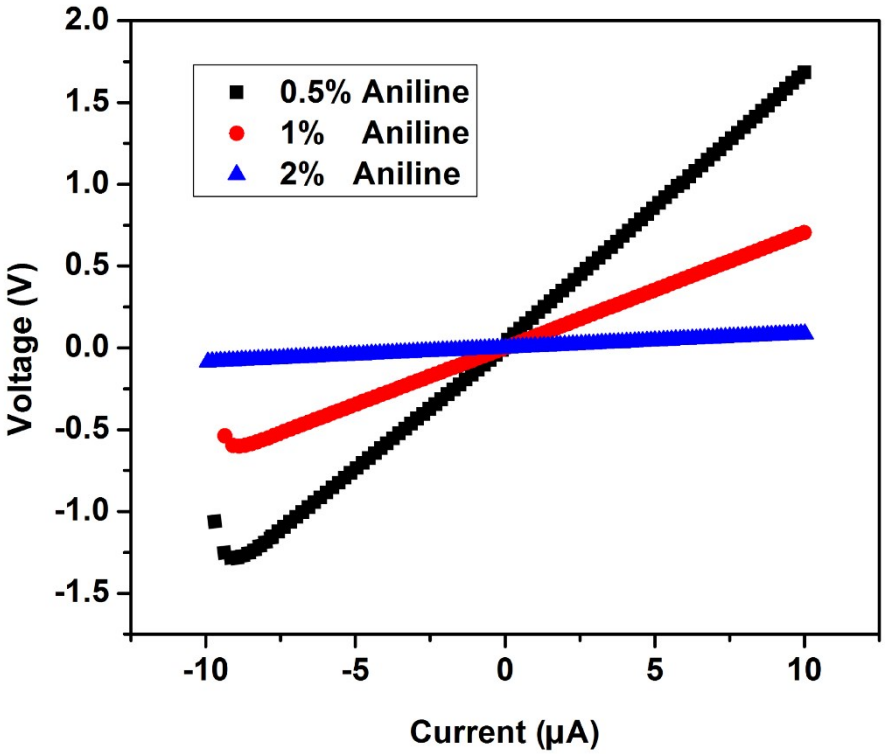

Fig. S5: V-I characterization of PANI/PCL conductive nanofibers for different aniline concentrations.

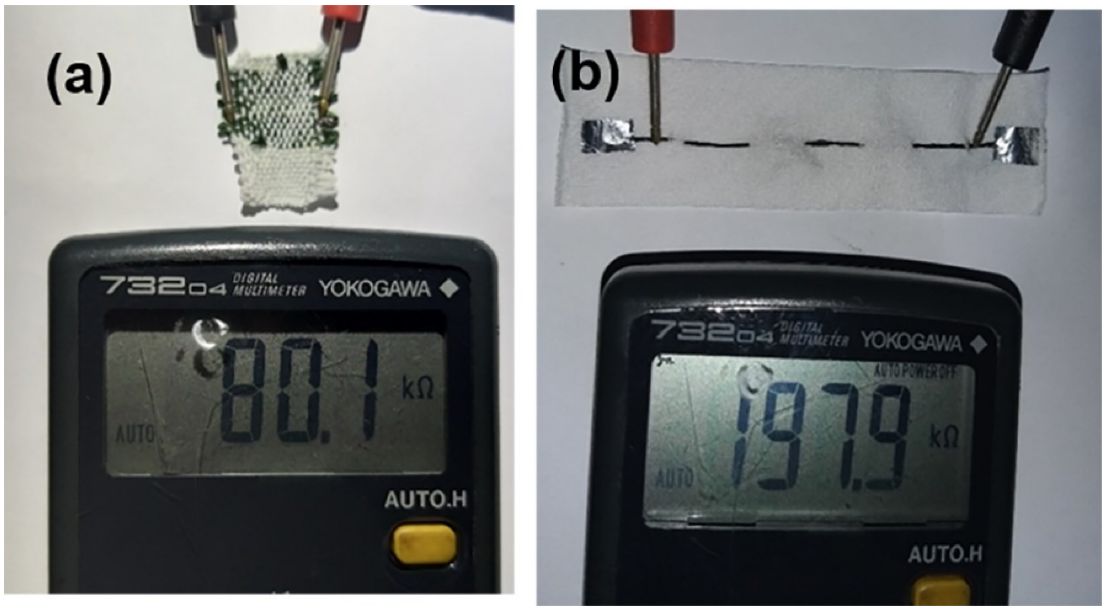

Fig. S6: Aniline 1 % coated nanofibrous yarns incorporated with fabric by (a) weaving and (b) sewing.

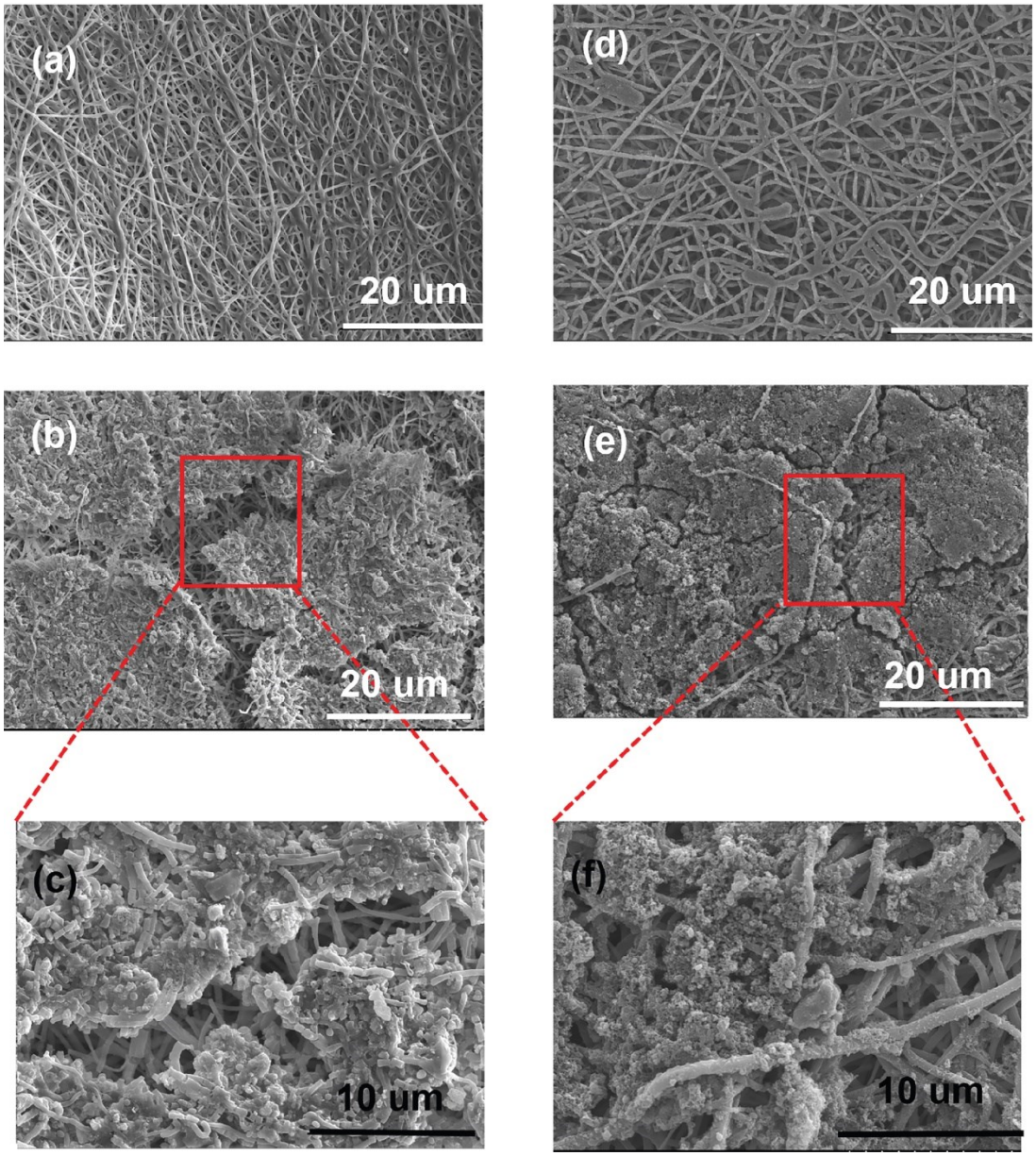

Fig. S7: SEM images of PCL nanofiber (a) before degradation and (b-c) after degradation in soil. PANI/PCL nanofibers (d) before degradation and (e-f) after degradation in soil.