Electrospun nanowire-based triboelectric nanogenerator and its application on the full self-powered UV detector

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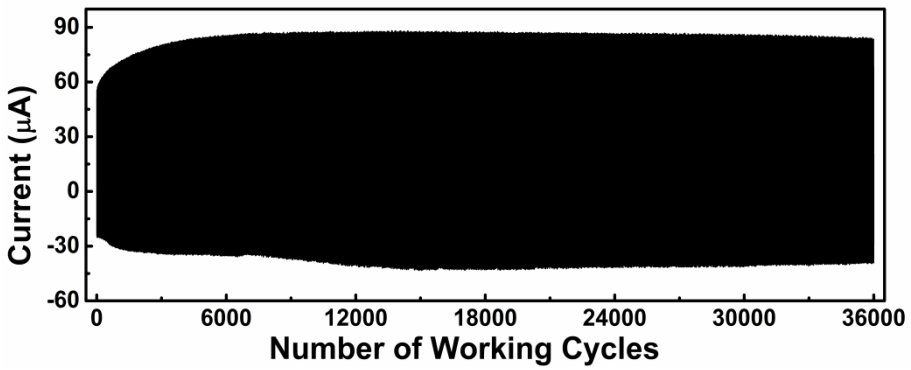

Fig. S1 Mechanical stability of the ENTENG. Only a slight decline is observed for the short-circuit current.

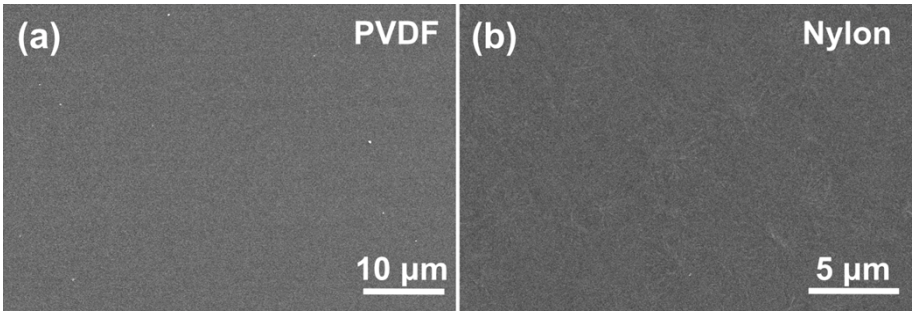

Fig. S2 SEM images of the smooth PVDF (a) and Nylon (b) films.

The smooth surface TENG has the same device structure as the ENTENG except that the surface morphology of triboelectric materials is different. The smooth films are fabricated by spin-coating polymer solutions onto mirror-polished silicon wafers. For the smooth PVDF film, the PVDF electrospinning solution is spin-coated at 5000 rpm onto the wafer for 30 s and subsequently heated at 80 °C to remove the solvent. Then the smooth PVDF film is fixed on a Kapton film with Ag deposited on the reverse side by a thin PDMS bonding layer and then peeled off from the wafer. For the smooth Nylon film, we used a solution of 25 wt.% Nylon in formic acid instead of the Nylon electrospinning solution because the boiling point of dichloromethane is

low. After spin-coating (5000rpm, 30s) and heating (80 °C), the smooth Nylon film is fixed on a Kapton film with Ag deposited on the same side by a thin PDMS bonding layer and then peeled off from the wafer. Then the two processed plates are fixed face-to-face with ordinary adhesive tape to form the arch-shaped smooth surface TENG.

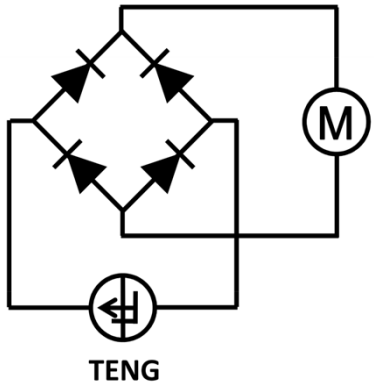

Fig. S3 Circuit diagram of powering a DC motor by an ENTENG.

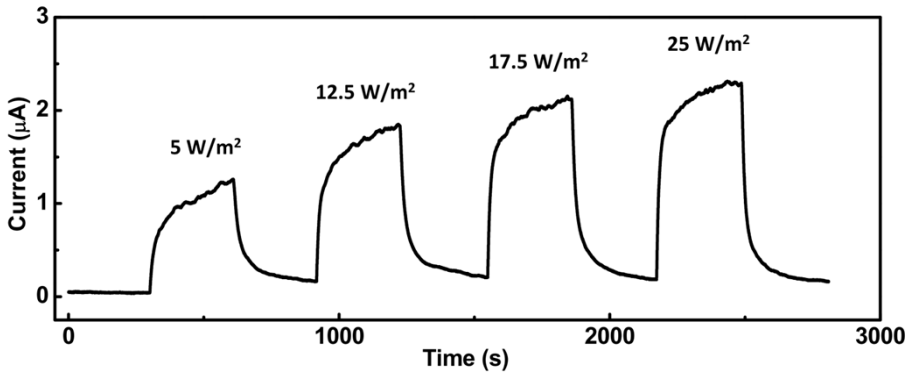

Fig. S4 Photoresponses of the ZnO nanofiber based UV sensor at a bias voltage of 1 V under UV intensity of 5, 12.5, 17.5 and 25 W/m^2.