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Supplementary Materials for

Biodegradable triboelectric nanogenerator as a life-time designed implantable power source

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The PDF file includes:

Supplementary Materials

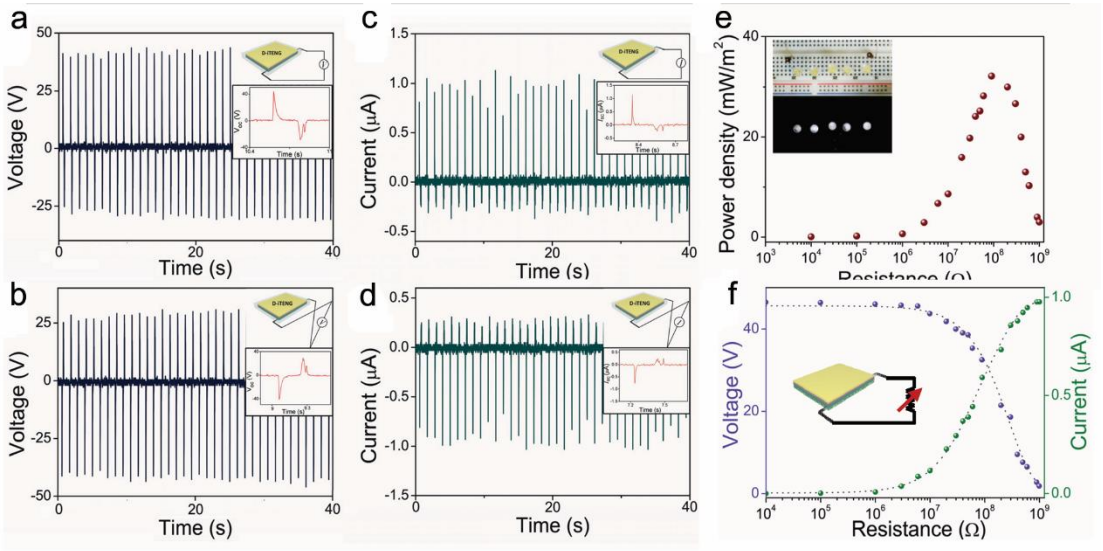

Fig. S1. Typical output performance of BD-TENG. A. Open-circuit voltage; **B**. Open-circuit voltage when reversely connected; **C**. Short-circuit current of BD-TENG; **D**. Short-circuit current when reversely connected; **E**. The power density at different load resistance; **F**. The voltage and current at different load resistance.

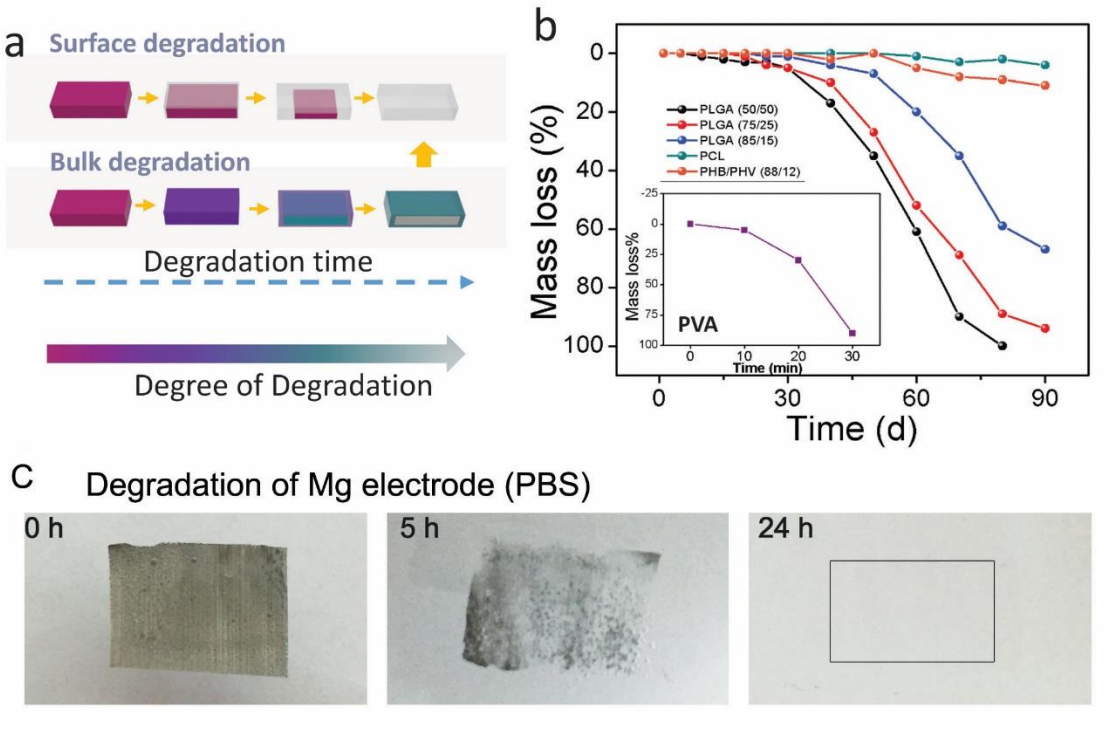

Fig. S2. In vitro degradation of BDPs and metal electrode. a. Schematic diagram of degradation process of BDP films. **b.** A plot of mass loss of different BDP films. (Inset: the plot of mass loss of PVA film). **c.** Photographs from Mg electrode at various stages of the degradation time.

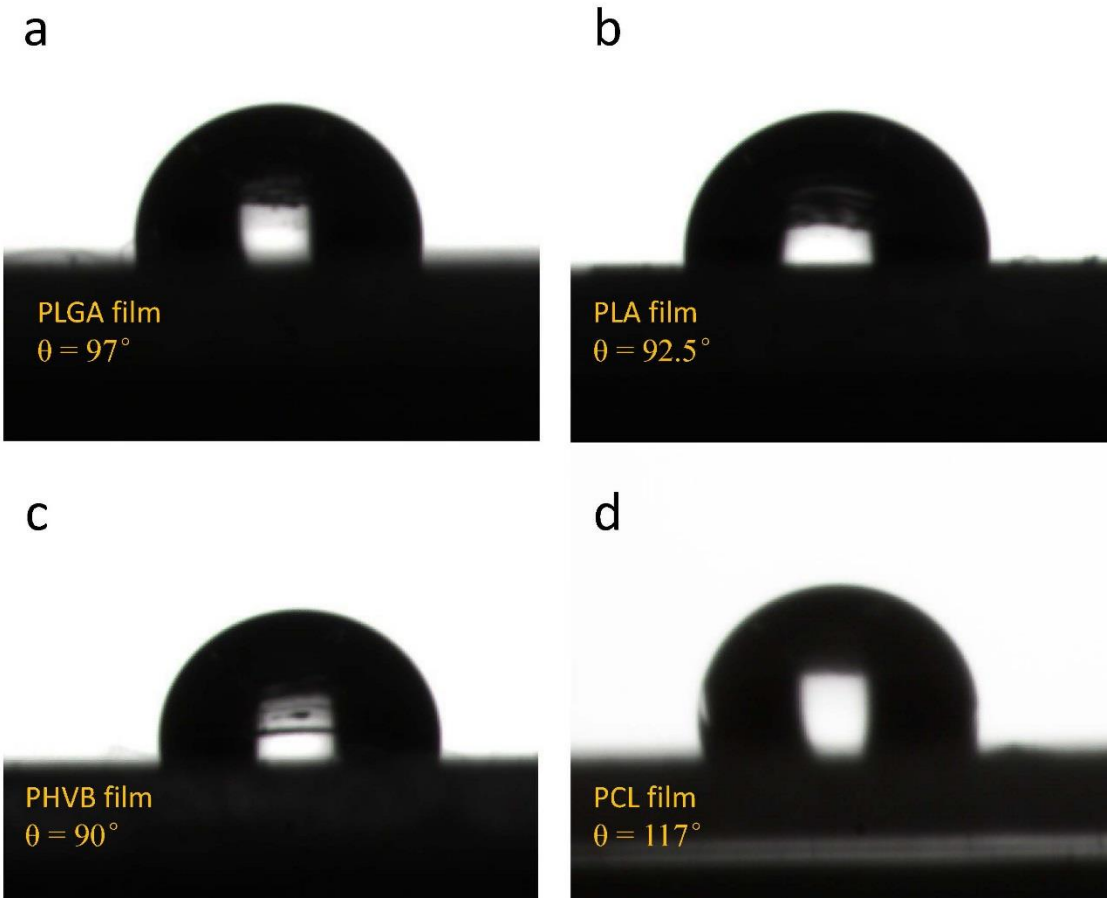

Fig. S3. Water contact angle test of selected BDPs. The water contact angle of encapsulation materials was tested to demonstrate their hydrophobicity.

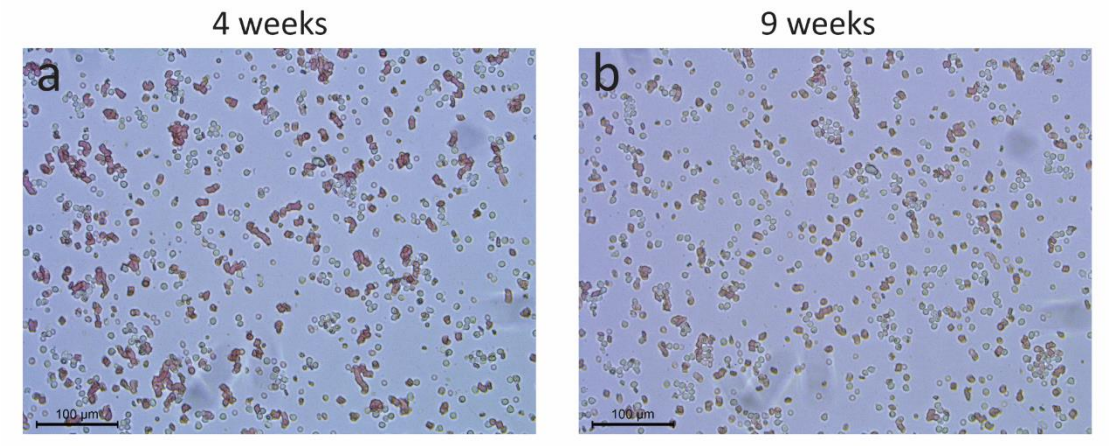

Fig. S4. Bright-field microscope image of tissue fluid smears without any stain. The tissue fluid was extracted from the implant site. **a.** 4 weeks after implantation. **b.** 9 weeks after implantation.

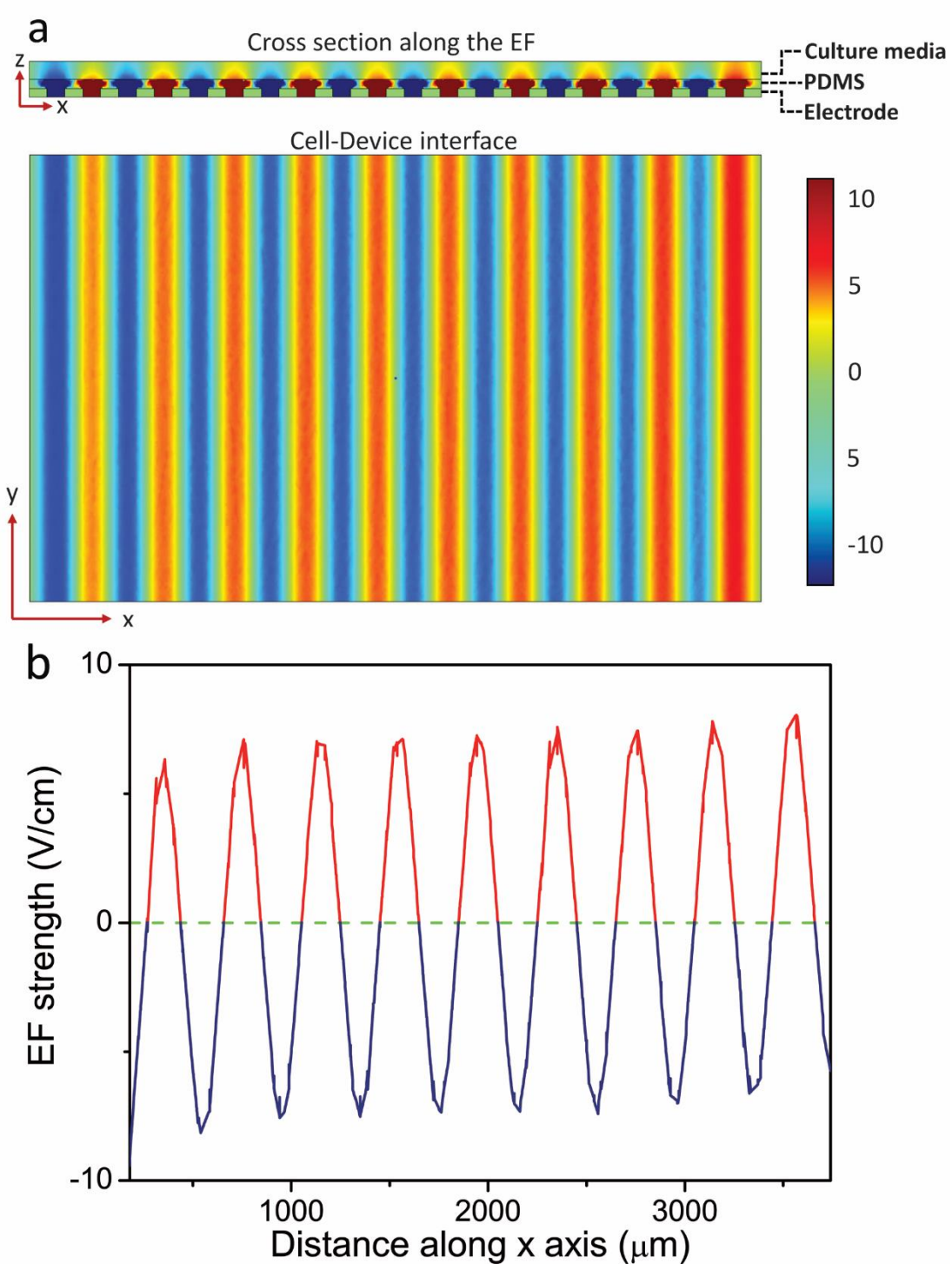

Fig. S5. Calculated distribution of the EF of the stimulation device via finite element method (assuming that the input voltage of BD-TENG was 1 V). a, Distribution of the electric field on cross section along the EF direction (up) and cell-device interface (down). **b,** The calculated electric field along the x axis.

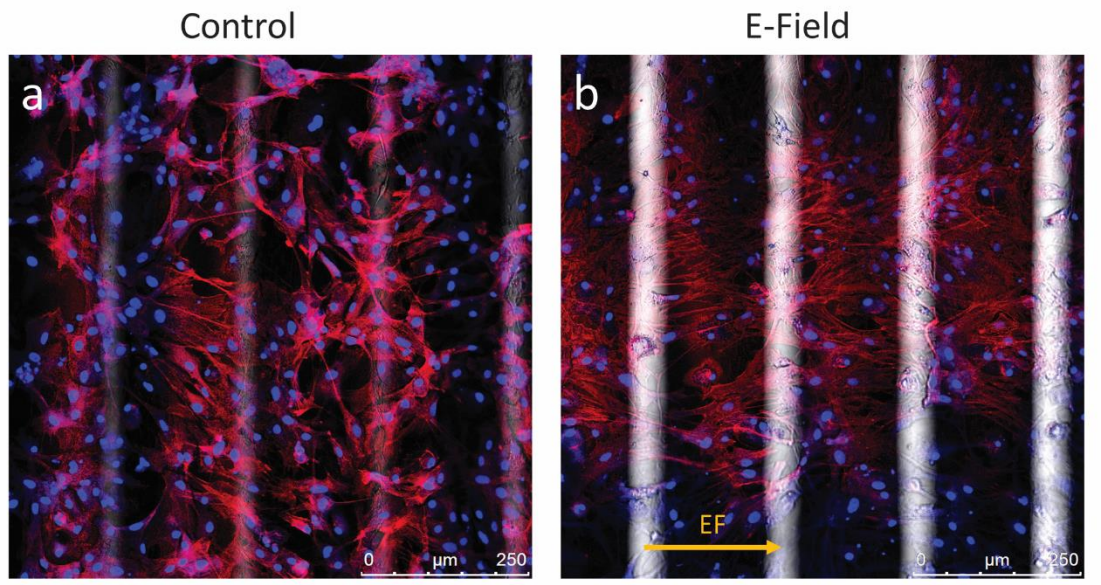

Fig. S6. A larger view of nerve cell cultured on the electrodes. a. Without electrical stimulation. **b.** Stimulated by FDNG (electrical field was shown as yellow arrow).