

Eco-friendly pectin polymer film-based triboelectric nanogenerator for energy scavenging

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1. Fabrication of triboelectric nanogenerator (TENG)

The vertical separation mode triboelectric nanogenerator was fabricated using pectin polymer and polyimide films attached to the copper (Cu) electrodes with the size of $2 \times 2 \text{ cm}^2$. Here, both the Cu tapes were used as the electrodes of TENG. After that, the pectin polymer/Cu and polyimide/Cu stacks are attached at the center of two acrylic plates with the size of $5 \times 5 \text{ cm}^2$. Finally, the two acrylic substrates were put together by fixing four soft springs at their corners to fabricate the TENG device, and then both pectin polymer and polyimide films were faced opposite to each other.

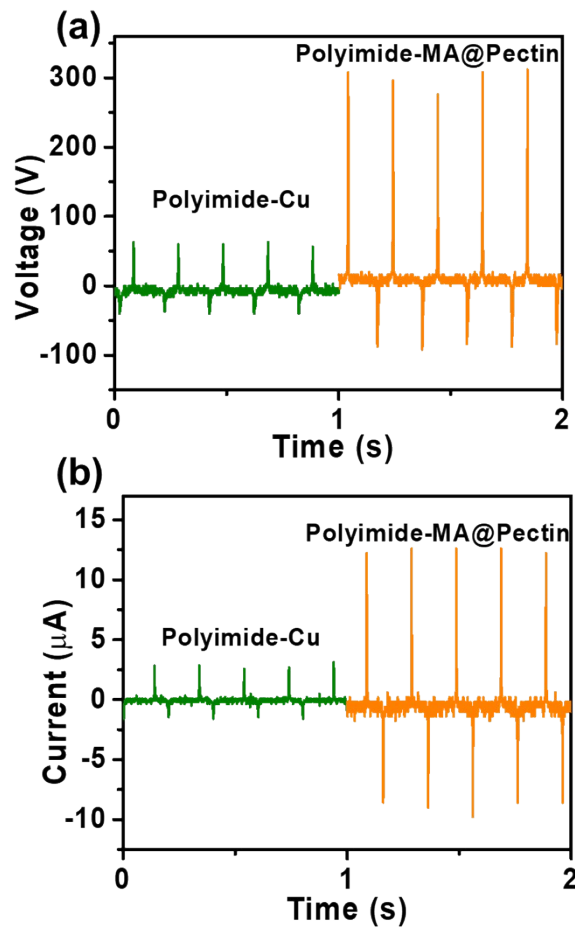


Fig. S1. (a) V_{OC} and (b) I_{SC} curves of the polyimide-Cu- and polyimide-MA@pectin-based TENGs.

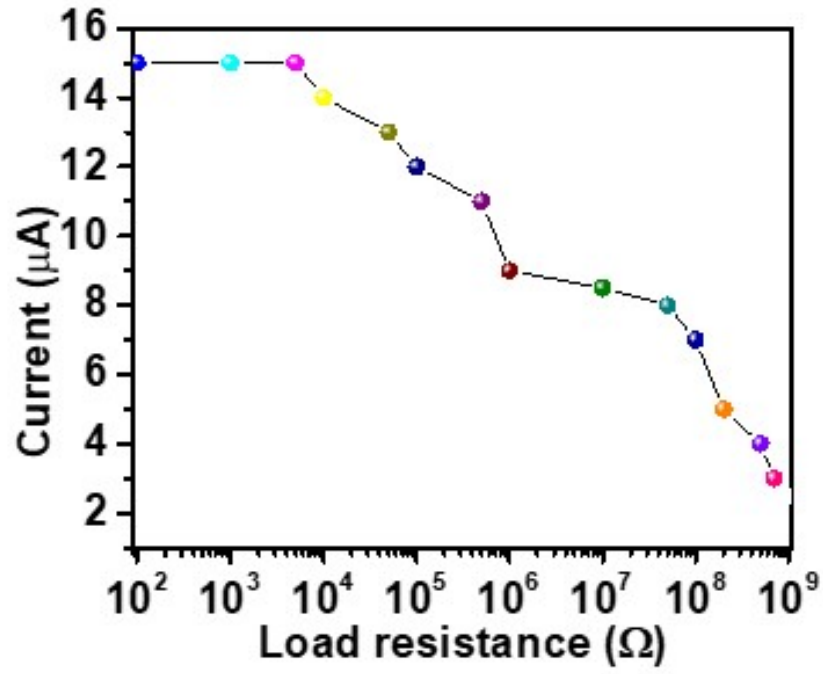


Fig. S2. Output current of the PP-TENG at various load resistances.

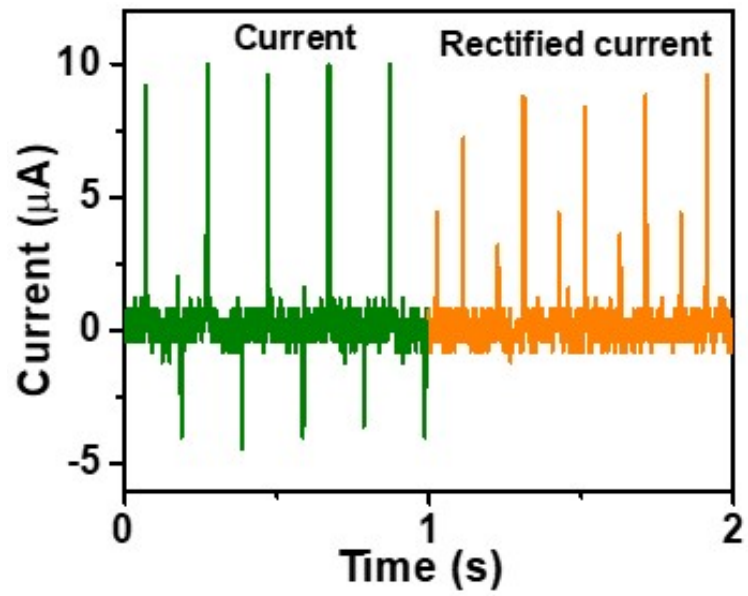


Fig. S3. Rectified current of the PP-TENG.

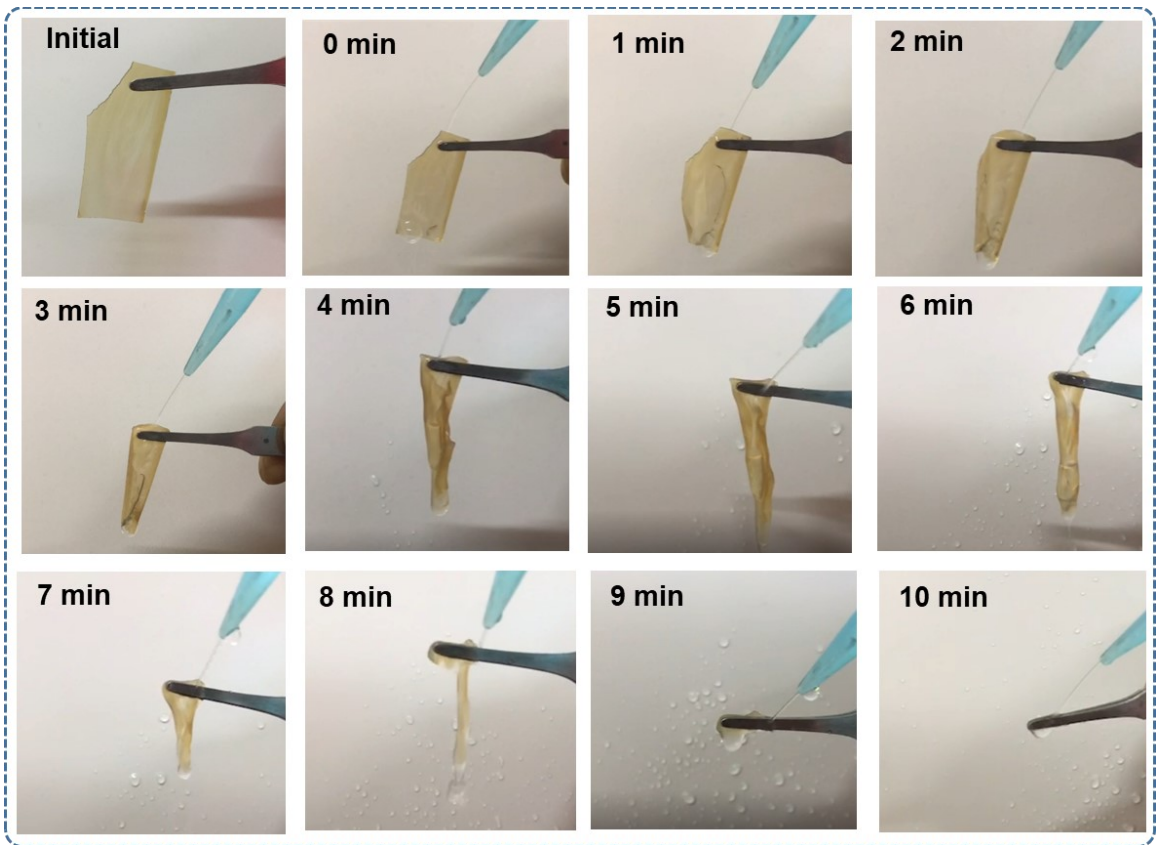


Fig. S4. Photographic images for the biodegradable test of pectin polymer film at various time intervals under continuous water flow on the film.

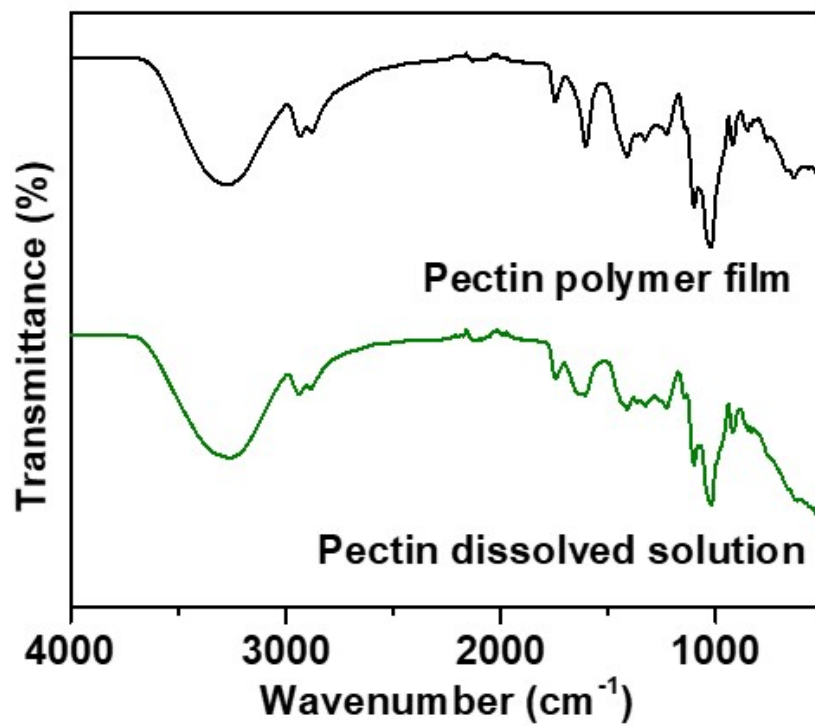


Fig. S5. Fourier-transform infrared (FT-IR) spectra of the pectin polymer film and the pectin polymer film degraded solution.

