Supporting Information

Natural Textile based Triboelectric Nanogenerators for Efficient Energy Harvesting Application

Weradesh Sangkhun[a] and Sompit Wanwong[a]*

[a]*Program of Materials Technology, School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi, 126 Pracha Uthit Road, Bang Mod, Thung Khru, Bangkok 10140, Thailand.*

Email: sompit.wan@kmutt.ac.th

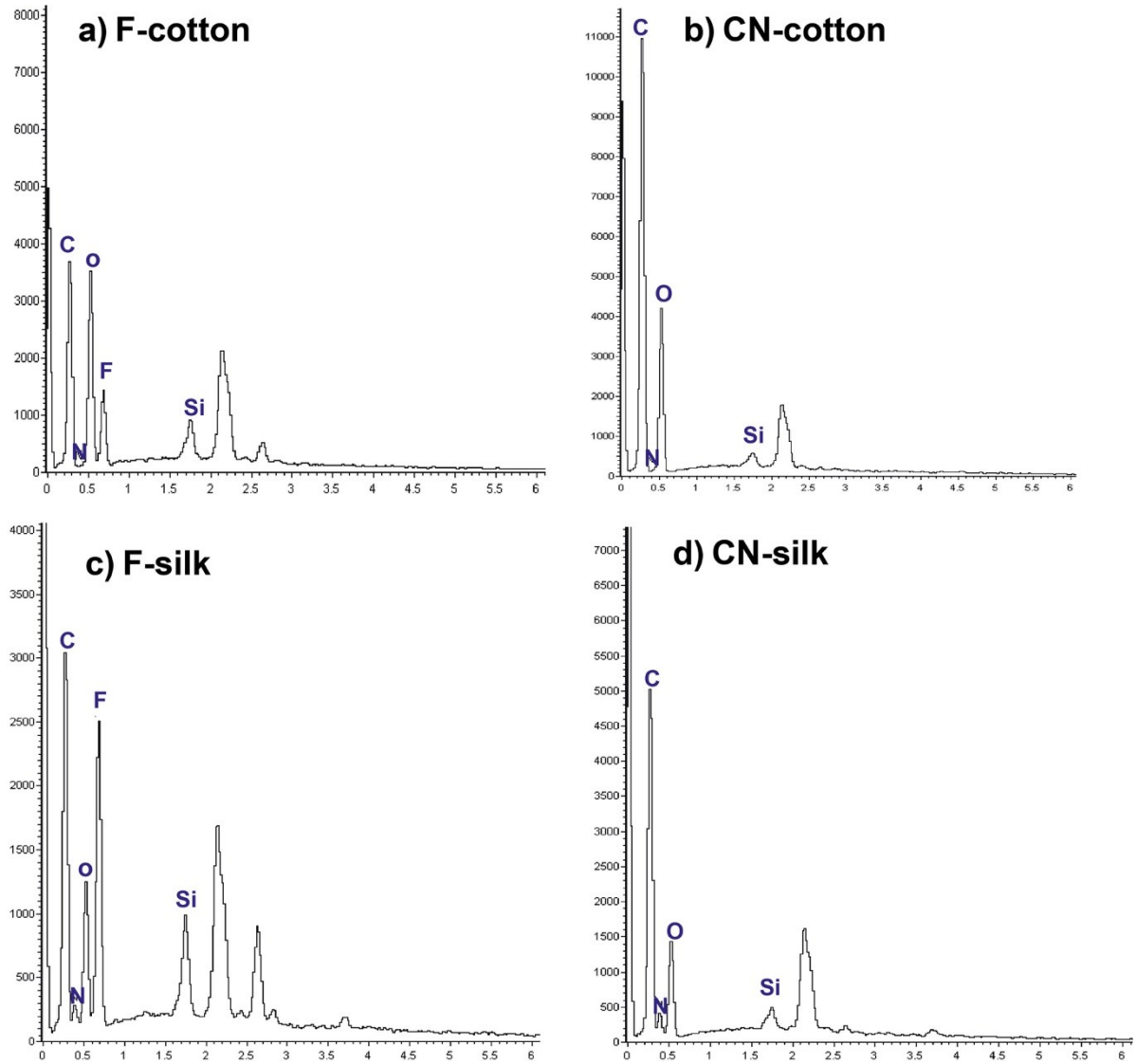

Figure S1. EDS spectra of (a) F-cotton, (b) CN-cotton, (c) F-silk and (d) CN-silk.

Table S1 Element composition of F-cot, F-silk, CN-cot and CN-silk

Samples	Atomic %				
	F 1s	O 1s	N 1s	C 1s	Si 2p
F-cot	62.2	6.3	-	25.9	5.6
F-silk	64.2	6.1	-	23.7	5.9
CN-cot	-	37.0	2.0	53.1	7.9
CN-silk	-	26.0	9.1	50.9	13.9

Effect of adhesive layer selection on output voltage of pristine TENG

In this work, we aim to facilely attach triboelectric textile with Cu fabric electrode by using conductive ink or glue. To optimize appropriate adhesive materials that offer low-cost production and simple fabrication, we applied three different types of adhesive material on the bottom layer of TENG, which are conductive Ag ink/ carbon ink, fabric glue and fabric glue mixed with graphite powder (20 % wt.), respectively.

Effect of adhesive layer selection on output voltage of pristine Cot-Cot TENG was illustrated in Fig S2. It was found that Cot-Cot TENG using conductive silver ink as adhesive layer between cotton and cu electrode provide very low output voltage. Whereas, Cot-Cot TENG that utilized fabric glue and fabric glue/graphite as adhesive can significantly raise the output voltage up to 25-35 V. This suggested that the enhancement of output voltage of plain textile could be mainly due to chemical component in the commercial fabric adhesive glue (Vibra-Tite) such as cyanoacrylate compound, which create different tribopolarity between the top and bottom layer of cot-cot TENG. In addition, adding graphite particles in fabric glue matrix can enhance interfacial contact and charge extraction ability to the electrode[1, 2].

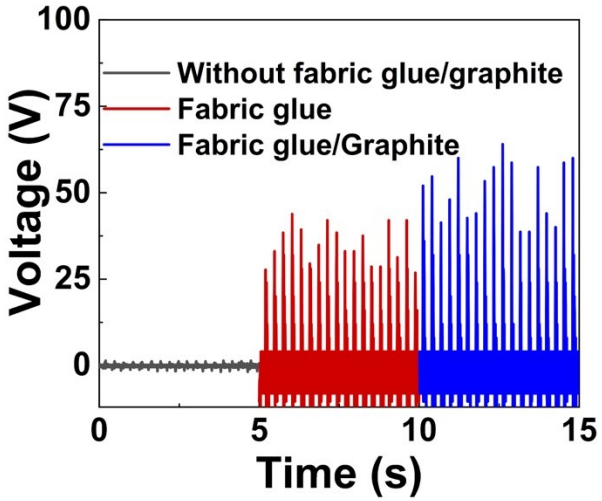

Figure S2 Output voltage of pristine cotton-TENG using different adhesive materials.

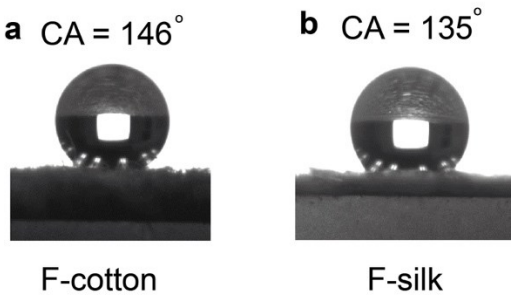

Figure S3 Water contact angle of (a) F-cotton and (b) F-silk.

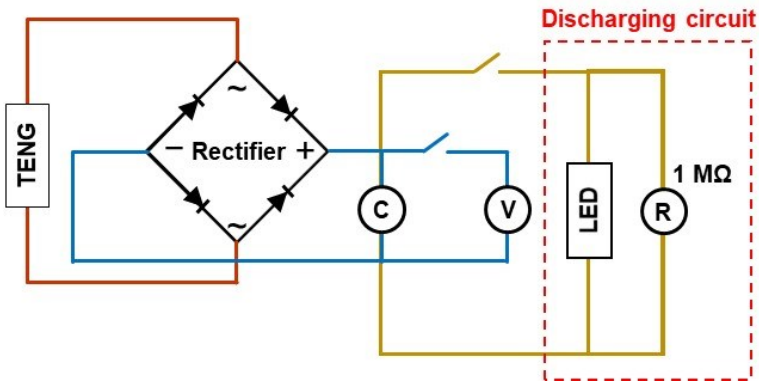

Figure S4 Circuit diagram of capacitive charging using double stacked N-TENG.

Reference

1. G. Pace, A. Ansaldo, M. Serri, S. Lauciello and F. Bonaccorso, *Nano Energy*, 2020, **76**, 104989.
2. Y. Liu, W. Liu, Z. L. Wang, W. He, Q. Tang, Y. Xi, X. Wang, H. Guo and C. Hu, *Nature Communications*, 2020, **11**, 1-8.