Supporting information

Self-Powered Sucrose Detection Using a Superhydrophobic Liquid–Solid Triboelectric Nanogenerator

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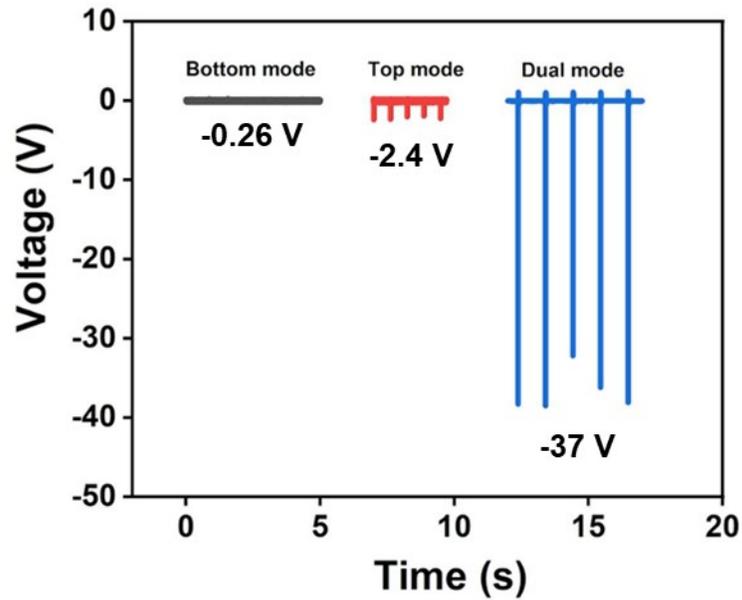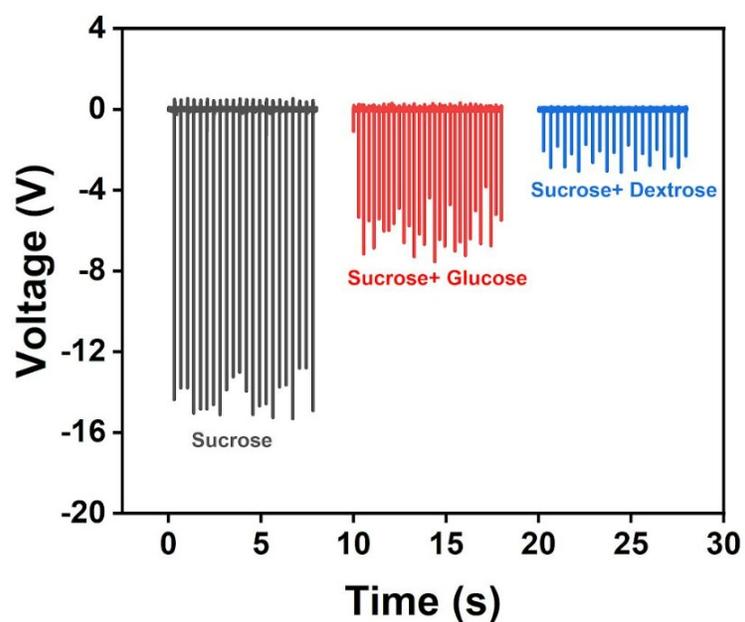
Figure S1: Voltage output comparison of L-S TENG having various configuration such as bottom electrode, top electrode, and dual electrode mode.
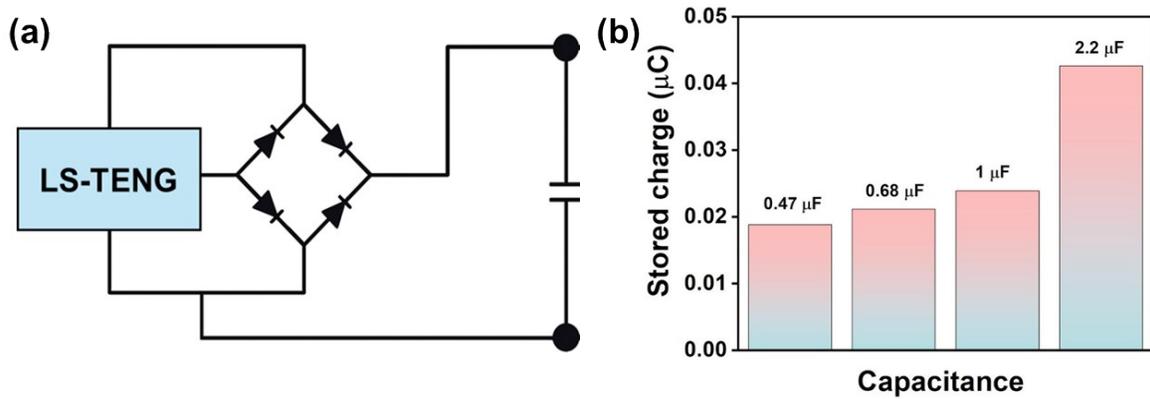
Figure S2: (a) Circuit diagram of the L-S TENG for charging of capacitors and (b) stored charge by the capacitors using L-S TENG.

Figure S3: Voltage output comparison of the L-S TENG for a fixed solid layer PTFE varying liquid, such as 50 ml of DI water, 8 wt% sucrose, 50 ml of DI water mixed with 8 wt% sucrose+ 8 wt% glucose, and 50 ml of DI water mixed with 8 wt% sucrose+ 8 wt% dextrose.

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Table S1: Comparison of sucrose sensing techniques with the proposed L–S TENG system

Sensing Technique	Power Requirement	Sensitivity	Key Advantages
Electrochemical Sensors	External power required	High	High accuracy and quantitative detection
Optical Sensors (Spectroscopic/Colorimetric)	External instrumentation required	High	High precision and non-contact detection
Enzymatic Sensors	External power required	Very high	Excellent molecular selectivity
Superhydrophobic L–S TENG	Self-powered	High	Sustainable sensing and energy harvesting capability