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Porous and Air Gap Elastomeric Dielectric Layer for Wearable Capacitive Pressure Sensor with High Sensitivity and Wide Detection Range

Wei Li,[a,†] Xin Jin,[b,†] Yide Zheng,[a] Xudong Chang,[a] Wenyu Wang,[*,a] Tong Lin,[c] Fan Zheng,[d] Obiora Onyilagh,[d] Zhengtao Zhu[*,d]

[a.] School of Textile Science and Engineering, Tiangong University, Tianjin 300387, China.
[b.] School of Materials Science and Engineering, Tiangong University, Tianjin 300387, China.
[c.] Institute for Frontier Materials, Deakin University, Geelong, Victoria 3216, Australia.
[d.] Department of Chemistry, Biology, and Health Sciences, South Dakota School of Mines & Technology, Rapid City, South Dakota 57701, United States.

† Both authors contributed equally to the manuscript.

*Corresponding authors: wwy-322@126.com; zhengtao.zhu@sdsmt.edu

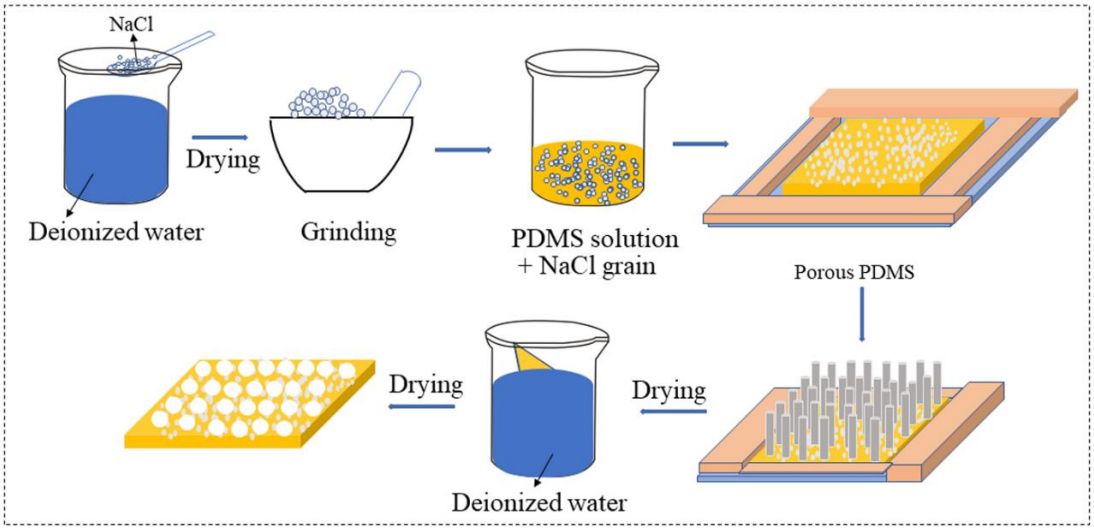

Figure S1. Preparation of the agp-PDMS.

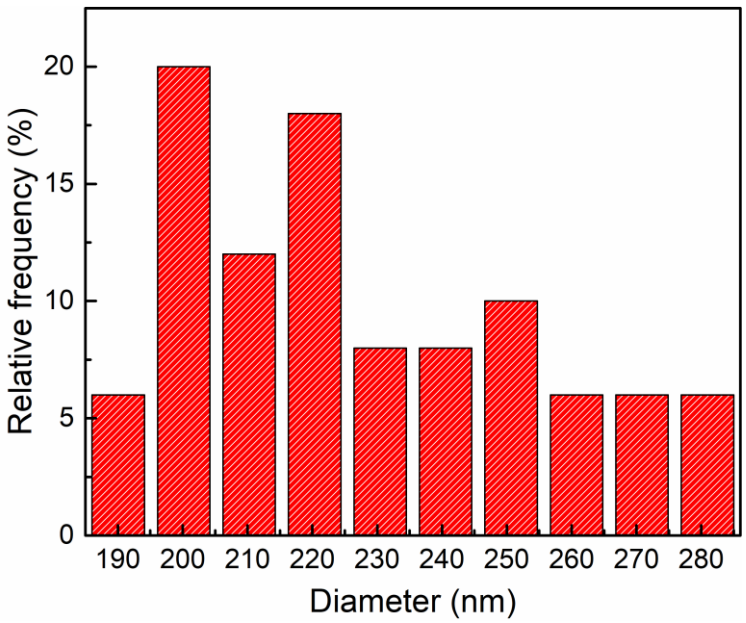

Figure S2. Histogram of the diameters of the PPy particles deposited on filter paper by vapor polymerization.

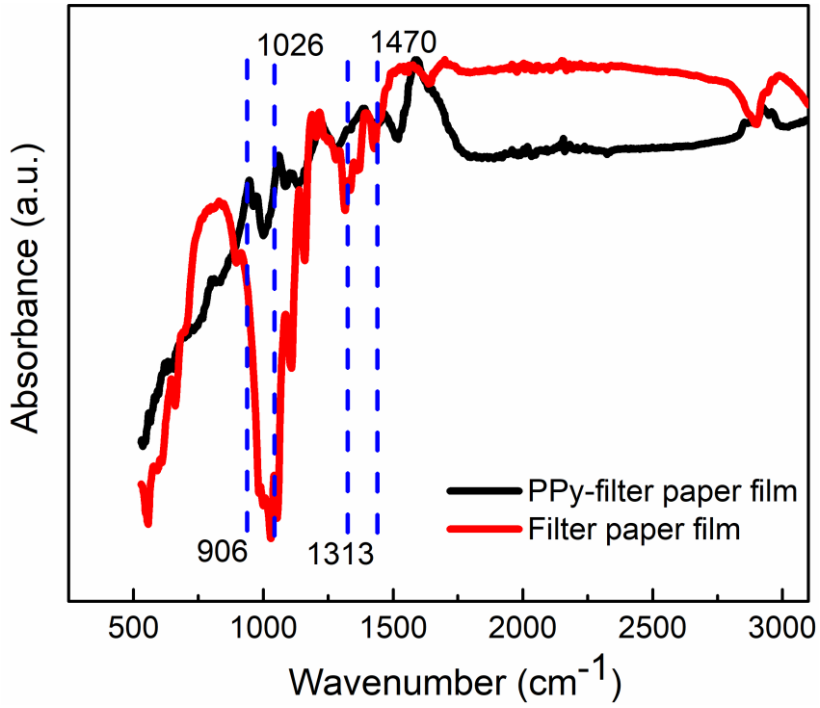

Figure S3. FT-IR spectra of the filter paper and the PPy/filter paper.

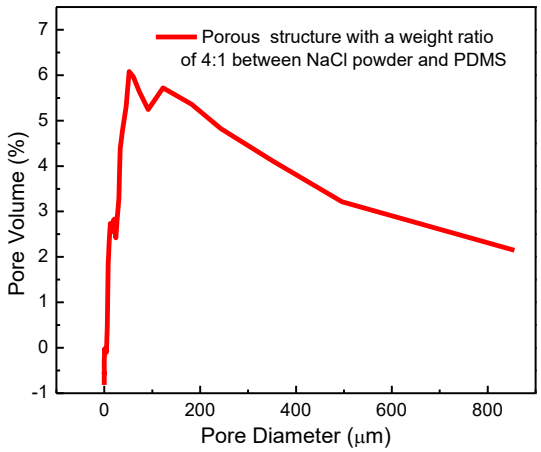

Figure S4. Pore size distribution of PDMS-h.

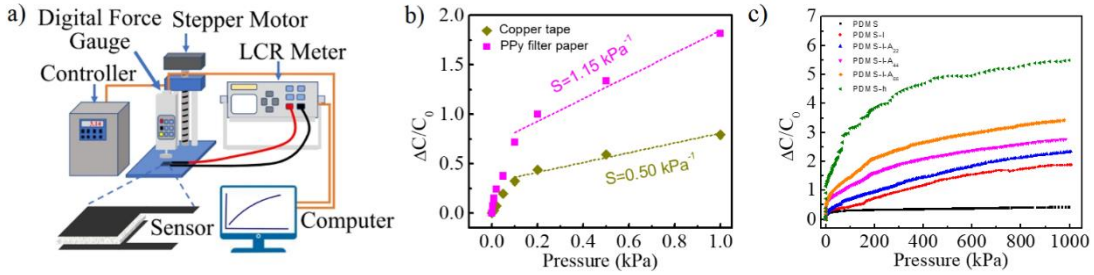

Figure S5. (a) Schematic of the capacitive sensor testing setup. (b) Comparion of the sensors based on PDMS-h-A_{66} under small pressure using PPy filter paper or copper tape as electrode contacts. (c) The relative capacitiance change $\Delta C/C_0$ as a function of applied pressure for devices based on solid PDMS, PDMS-l (30.4% porosity), PDMS-l-A_{22} (array of 2×2 holes), PDMS-l-A_{44} (array of 4×4 holes), PDMS-l-A_{66} (array of 6×6 holes), and PDMS-h (61.2% porosity).

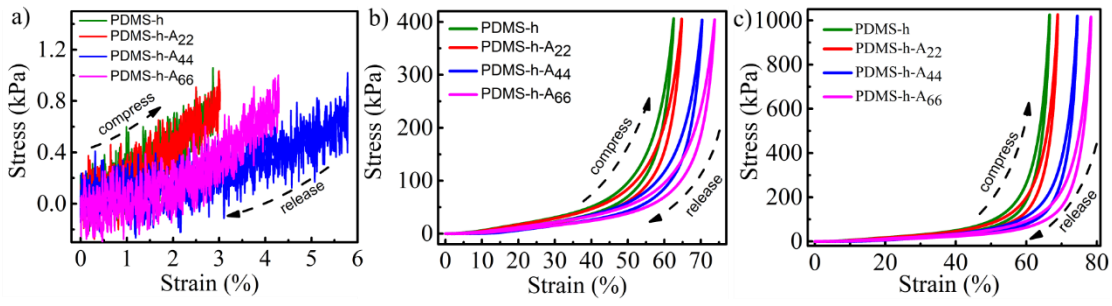

Figure S6. The curve of stress-compressive strain of applied pressure at small (5~1 kPa), intermediate (1~400 kPa), and large pressure ranges (400~1000 kPa), respectively.