Supplementary Information

Logic-Device-Inspired Mechanical Computing System Based on Three-Dimensional Active Components

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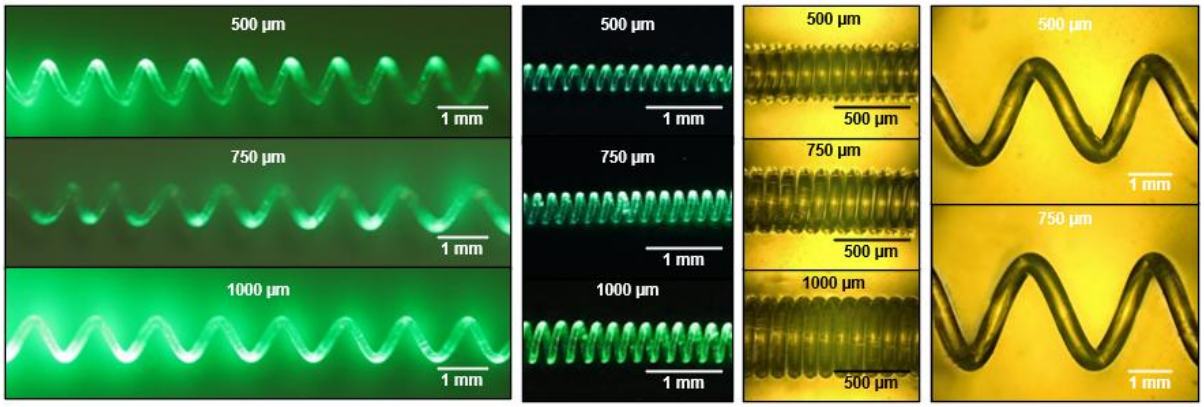
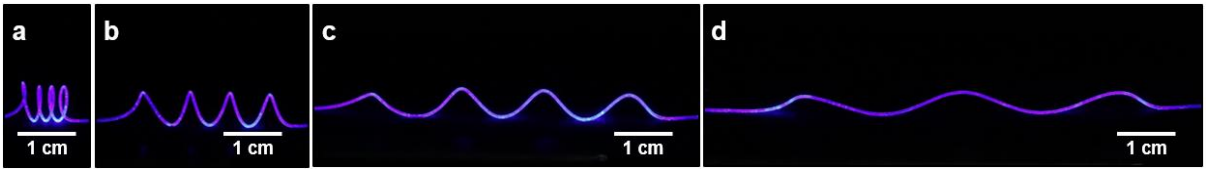
Supplementary Fig 1. to 6.

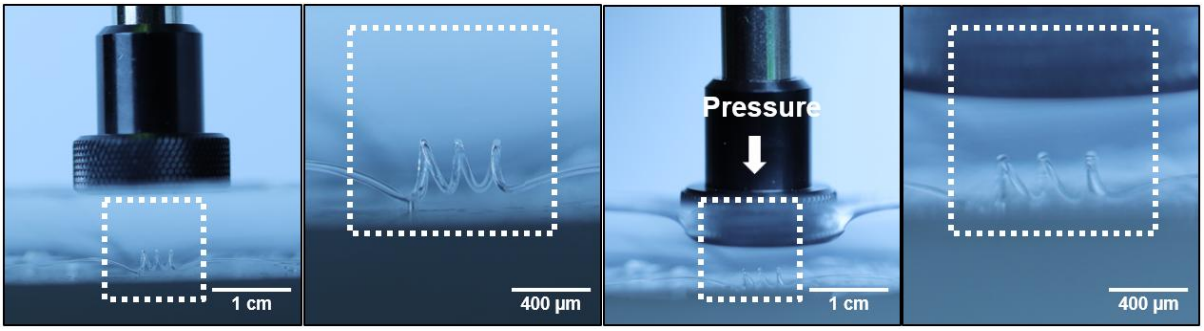
Supplementary Fig 1. Schematics illustration for the fabrication of the 3D helical structure optical fiber sensor.



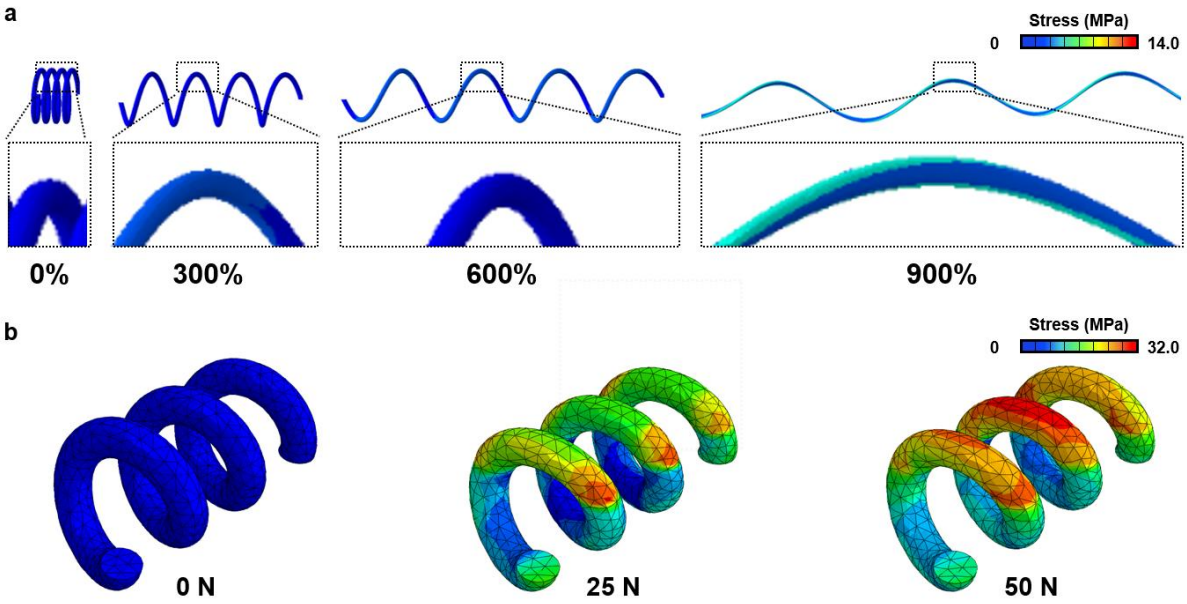
Supplementary Fig 2. Optical images and photographs of various 3D helical structure optical fibers with different diameters and core diameters.



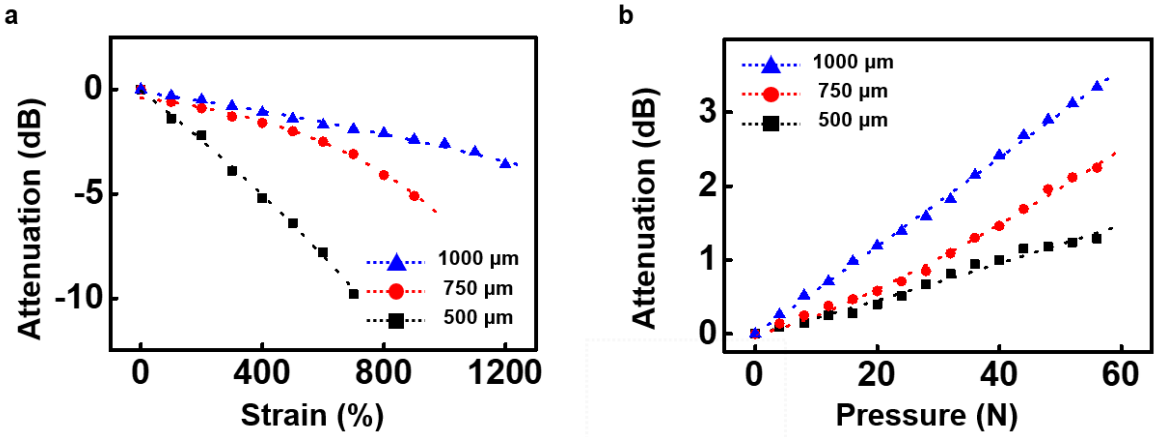
Supplementary Fig 3. An optical image of a 3D helical structure optical fiber sensor shows the corresponding results for the deformations and the distribution of helical fiber according to the various applied strains. **a** 0 %, **b** 300 %, **c** 600 %, **d** 900 %.



Supplementary Fig 4. Optical image of helical structure optical fiber as a pressure sensor. Before and After pressure photographs. Simulation image of helical structure optical fiber as a pressure sensor.



Supplementary Fig 5. Simulation data. **a** 0 %, 300 %, 600 %, 900 %. **b** 0 N, 25 N, 50 N



Supplementary Fig 6. a Response of attenuation changes of helical fibers with different optical fiber diameters as a function of strain. **b** Response of attenuation changes of helical fibers with different optical fiber`s diameter as a function of pressure.