Supplementary Information for

Optical Micro/Nanofiber Enabled Compact Tactile Sensor for Hardness Discrimination

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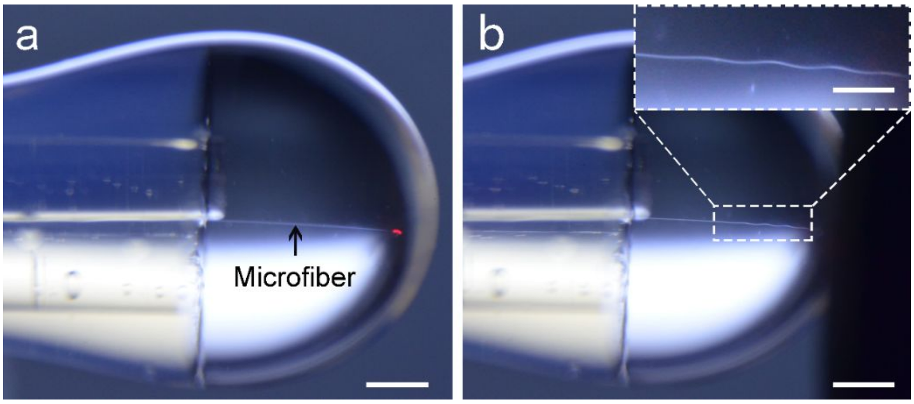

Figure S1. Micrographs of a compact tactile sensor before and after pressing. When the CTS contacts an object with applied pressure, the embedded microfiber in (a) becomes a wavy microfiber (b). Scale Bars: 300 μm. Inset of (b): Magnified image of the wavy microfiber. Scale Bar: 100 μm.

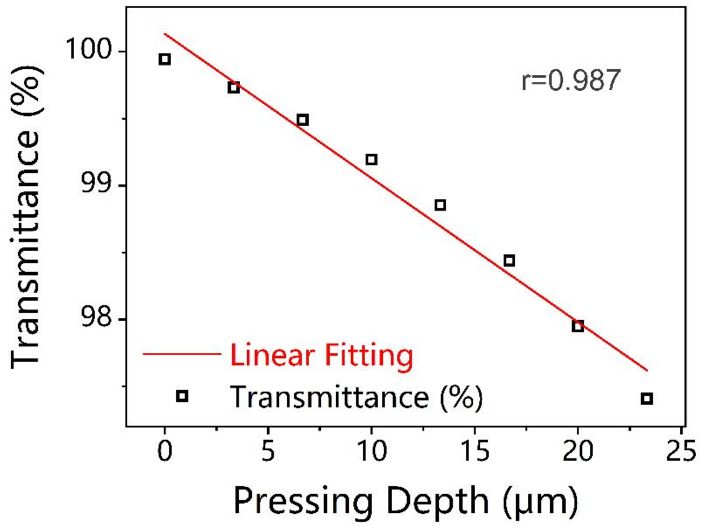

Figure S2. Response of the compact tactile sensor to different pressing depth. The transmittance at 700-nm-wavelength shows an approximately linear response (r = 0.987) to the pressing depth.

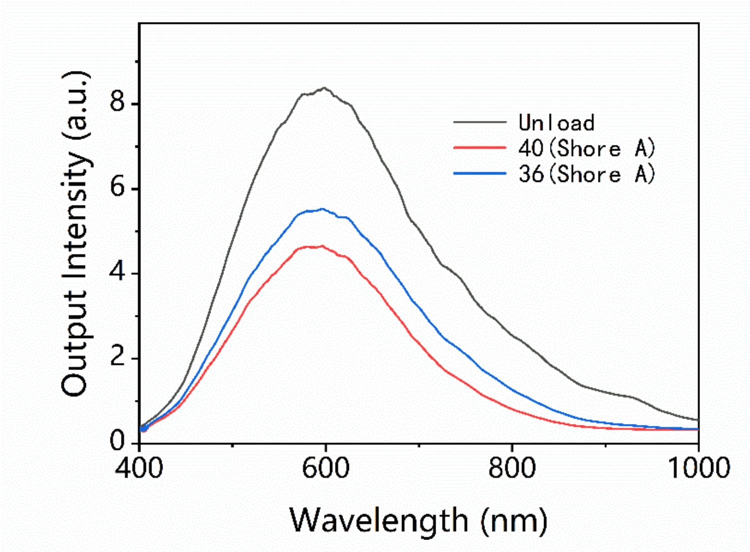

Figure S3. Hardness discrimination of two PDMS block with similar hardness, which is hardly to feel by human hands. Pressing depth: 300 μm.

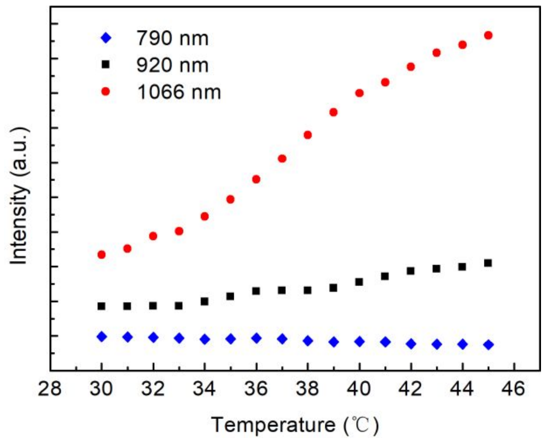

Figure S4. Response of the compact tactile sensor to temperature under no applied pressure. The wavelength depended feature makes it possible to decouple pressure and temperature signals because the response of the compact tactile sensor to pressure is insensitive to the wavelength of the probing light.

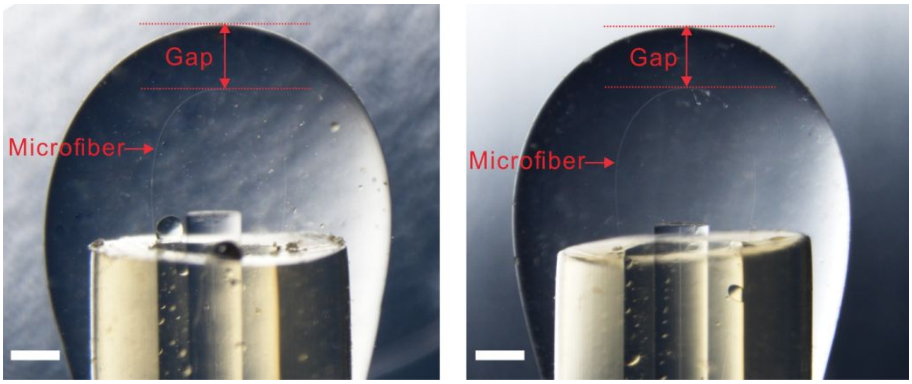

Figure S5. Micrographs of two compact tactile sensors with well controlled gap between the MNF and the apex of the PDMS micro-dome (Scale bars: 300 μm).