

Table S1. Value of $\Delta R/R_0$ of the composite with different mass fraction of CNTs and Ag NWs

Sample	Tensile strain (%)									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
8%CNTs	1.04	1.33	1.49	1.72	1.84	1.94	2.18	2.22	2.44	2.76
7%CNTs+2% Ag NWs	3.23	2.79	2.78	2.73	2.88	3.17	3.58	4.061	5.46	7.27
7%CNTs+4% Ag NWs	3.17	2.86	3.21	3.84	4.51	5.73	9.08	13.62	18.44	27.21
7%CNTs+6% Ag NWs	4.54	4.91	5.61	6.70	7.88	10.07	13.55	19.00	23.21	29.26
8%CNTs+2% Ag NWs	8.55	11.93	11.67	11.36	11.38	11.70	12.66	15.16	21.66	31.93
8%CNTs+4% Ag NWs	14.28	16.77	18.43	21.29	25.87	28.78	32.42	38.57		
9%CNTs+2% Ag NWs	8.10	9.66	10.39	11.73	12.96	15.53	18.94	22.19	27.12	33.50

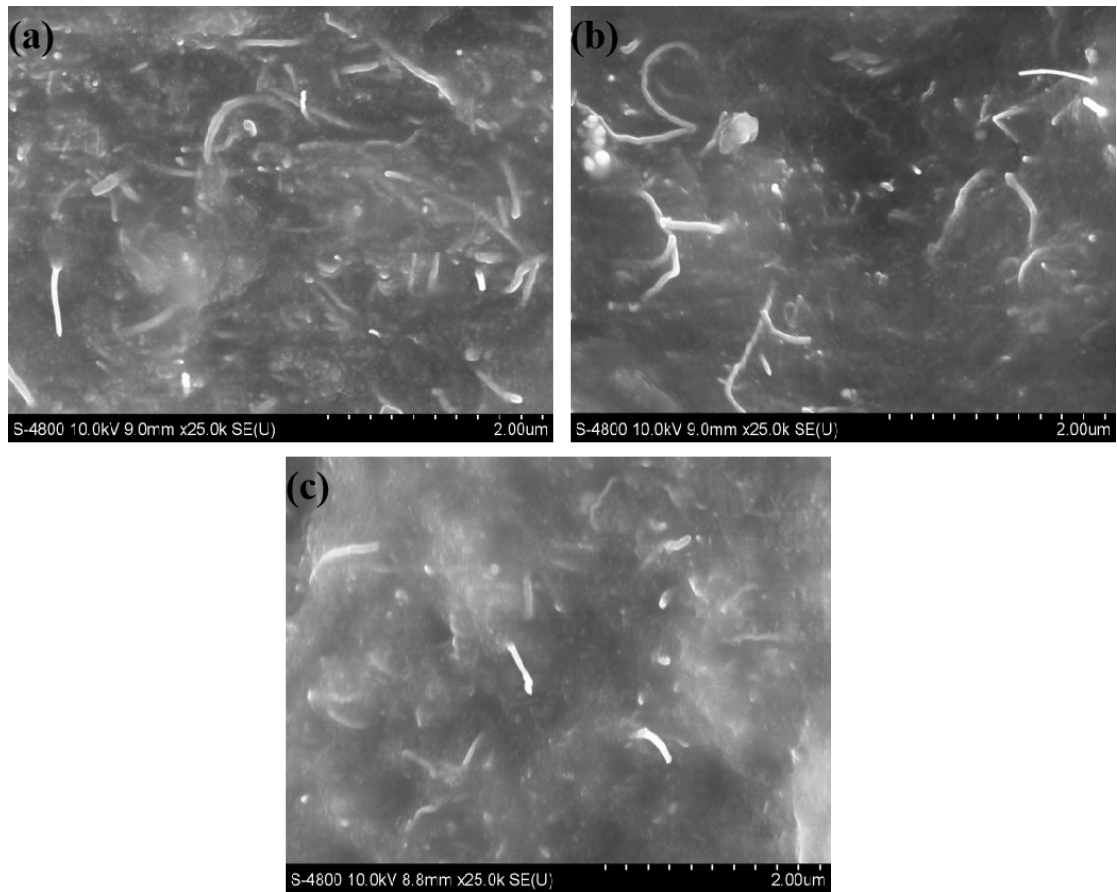


Fig.S1. Surface morphology of the conductive material under different tensile strains. (a)10%. (b) 30%. (c) 50%.

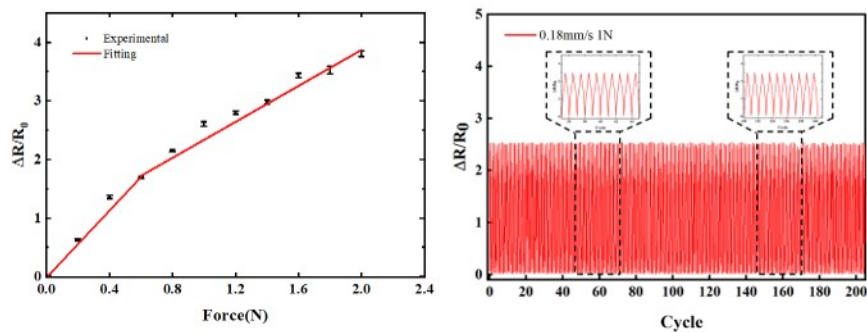


Fig.S2. Characterization results of the tactile sensor after being placed at room temperature for three months. (a) Force-sensing sensitivity characterization. (b) Cyclic loading and unloading tests.

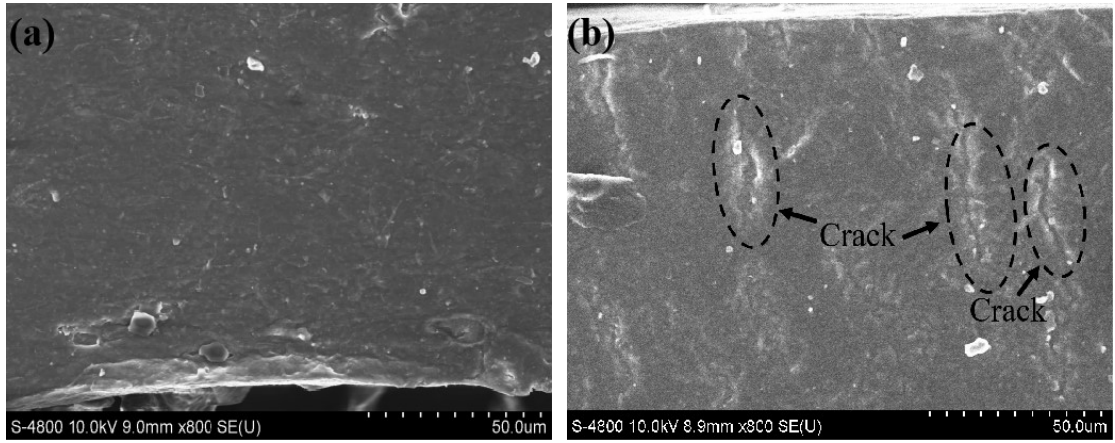


Fig.S3 Morphology of the crack on composite surface under different service environments: (a) the sensor was cycled continuously 200 times per day at its maximum compressive volume and repeated over 30 days, (b) continuous stretching the sensor at a tensile strain of 80% for 200 cycles.