Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

A pectin-based artificial nociceptor enabled actual tactile perception

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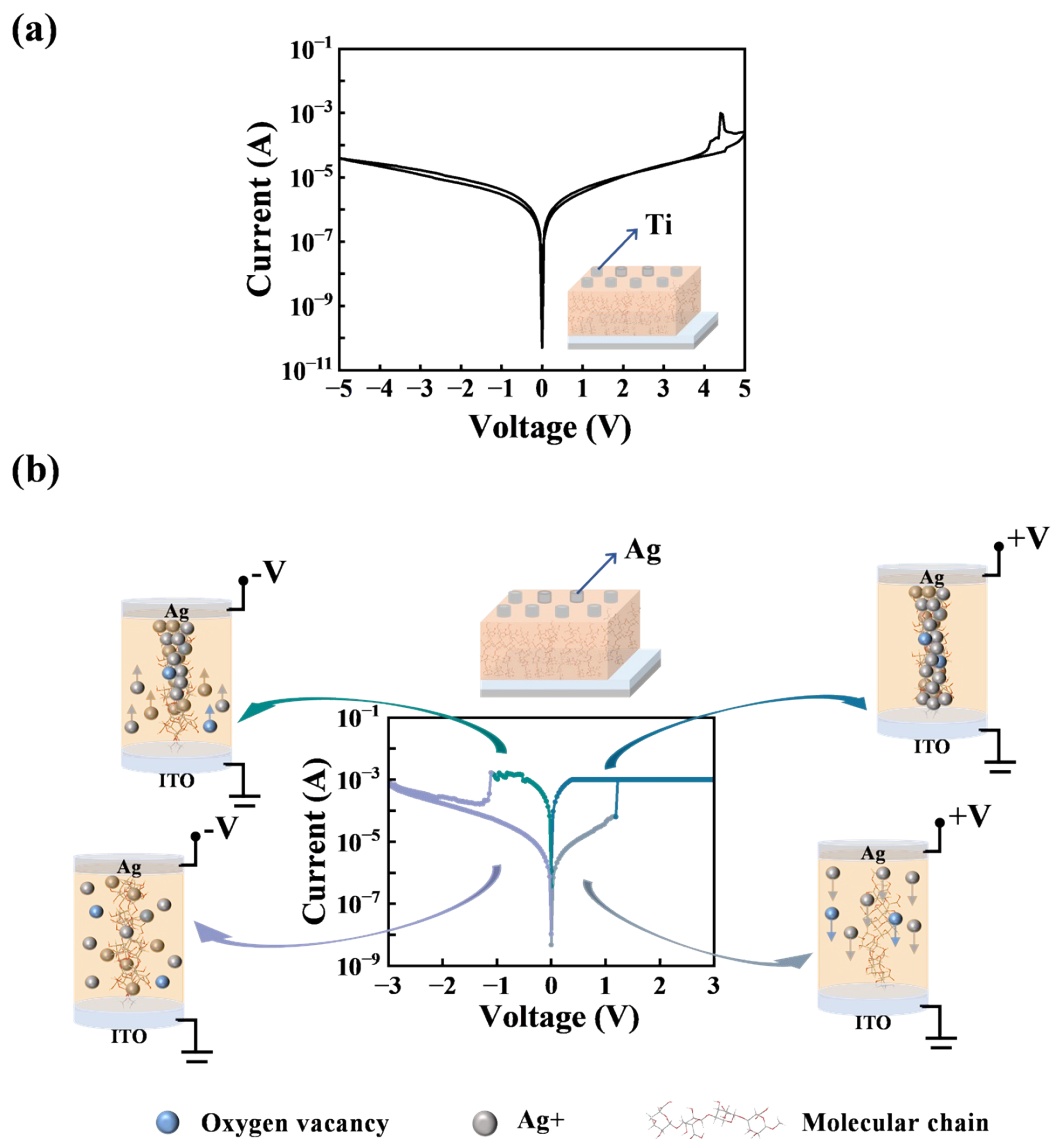kailiang_zhang2007@163.com (Kailiang Zhang)

Figure. S1 (a) I-V curve of Ti/pectin/ITO memristor device (inset is device structure). (b) Working mechanism of the Ag/pectin/ITO device.
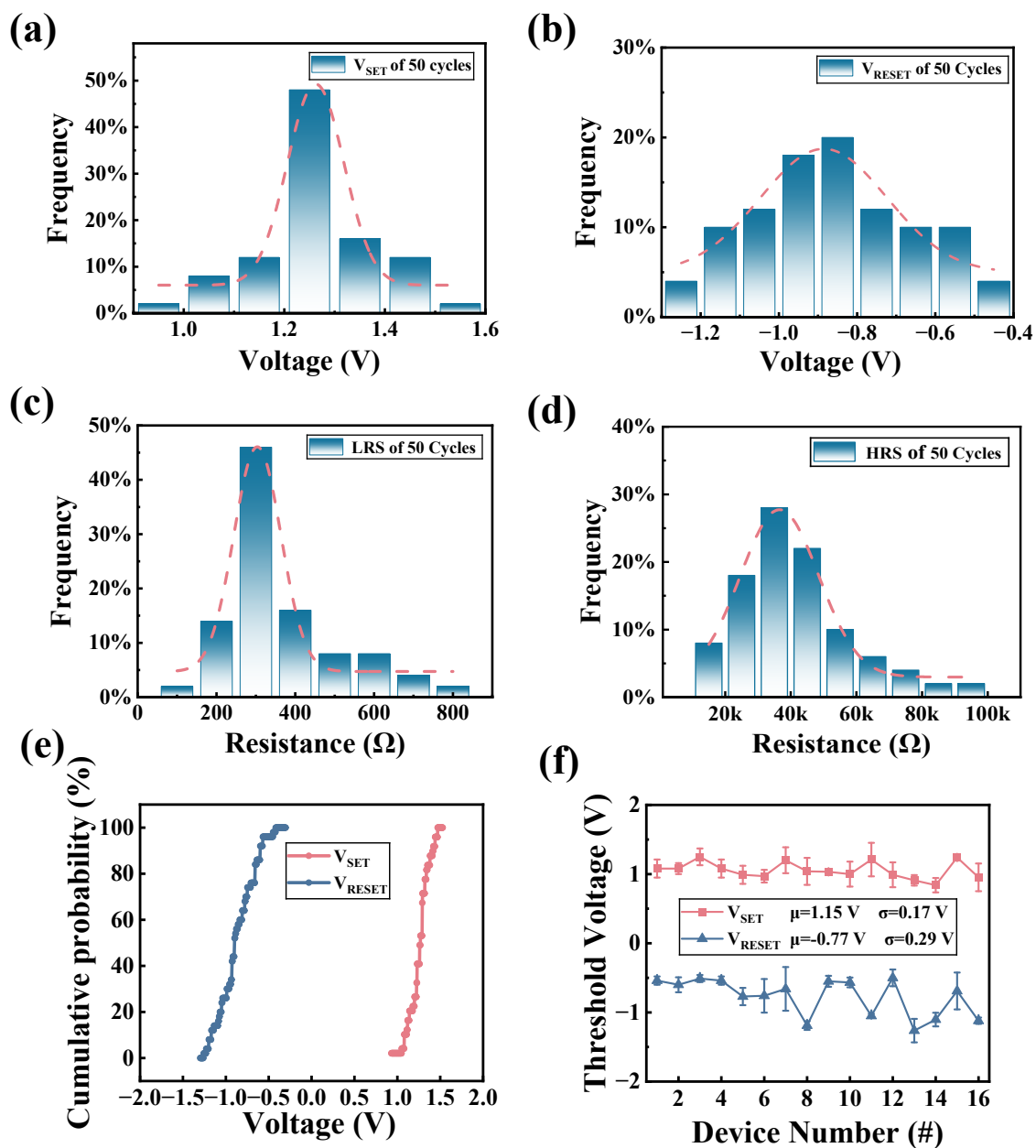
Figure. S2 The statistical results of (a) SET voltage, (b) RESET voltage, (c) low resistance state (LRS) and (d) high resistance state (HRS) distribution of Ag/pectin/ITO memristor devices. (e) Cumulative probability distribution of V_{SET} and V_{RESET}. (f) The average threshold voltage and standard deviation of 16 Ag/pectin/ITO devices.
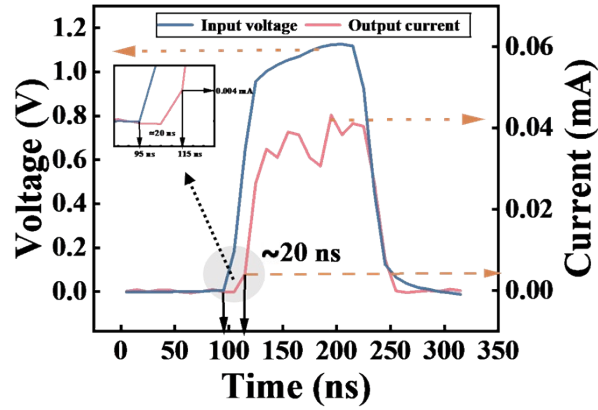
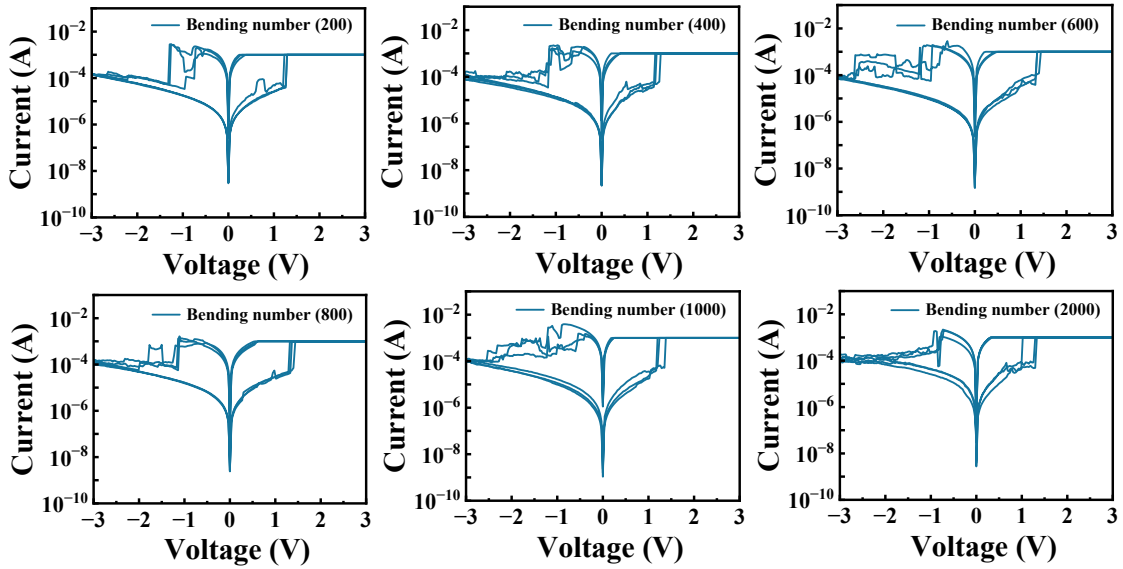**Figure. S3** Transient response of Ag/pectin/ITO memristor.

Figure. S4 Device performance after bending (a) 200 times, (b) 400 times, (c) 600 times, (d) 800 times, (e) 1000 times and (f) 2000 times, respectively.
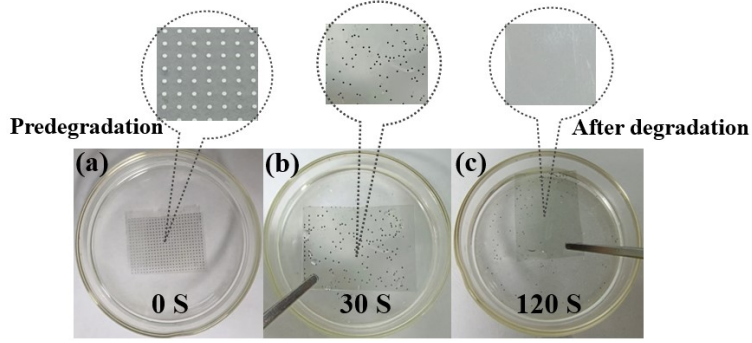
Figure. S5 Photos of Ag/pectin/ITO/PET devices after immersing in deionized water for (a) 0 s, (b) 30 s and (c) 120 s at room temperature.

Table 1 The device performance of biomaterial based memristors.

| Device structure: | $V_{SET/}$ V_{RESET} | ON/ OFF ratio | Nociceptor | | | | Reference |
			Thres -hold	Relax- ation	Non- adaptatio n	Sensiti -zation	
Ag /Chitosan/W	15.00/- 15.00 V	10^5	—	—	—	—	1
Ag/Dead leaves/ITO	1.00/- 1.50 V	50	—	—	—	—	2
Al/Eggshell/ITO	2.42/- 1.12 V	10^3	—	—	—	—	3
Ag/Lotus leaves/ITO	5.00/- 3.00 V	40	—	—	—	—	4
Ag/Pectin/ITO	1.20/- 0.87 V	$>10^2$	√	√	√	√	This work