

Super water-resistant MXene sponge Flexible Sensor for bitifunctional sensing of physical and chemical stimuli

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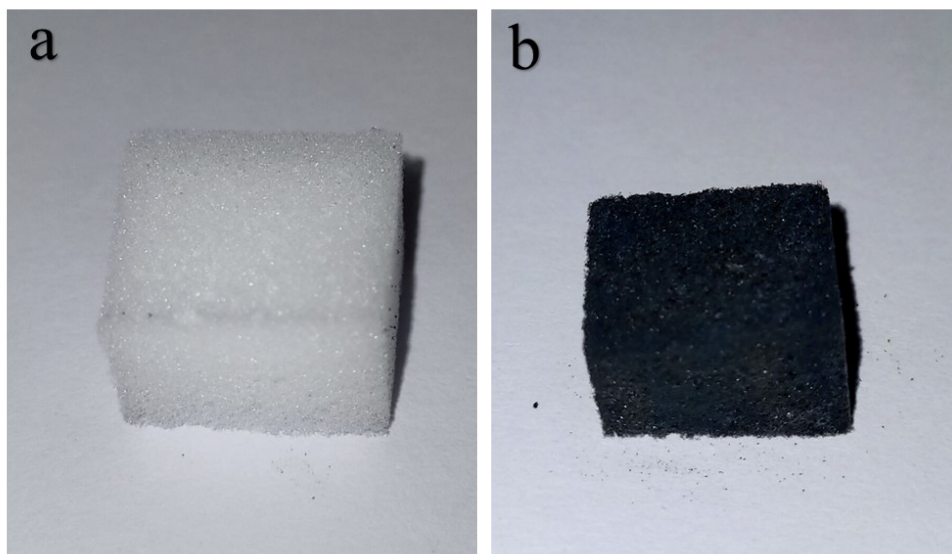


Fig S1. Digital images of (a)MS and (b)MXene@MS.

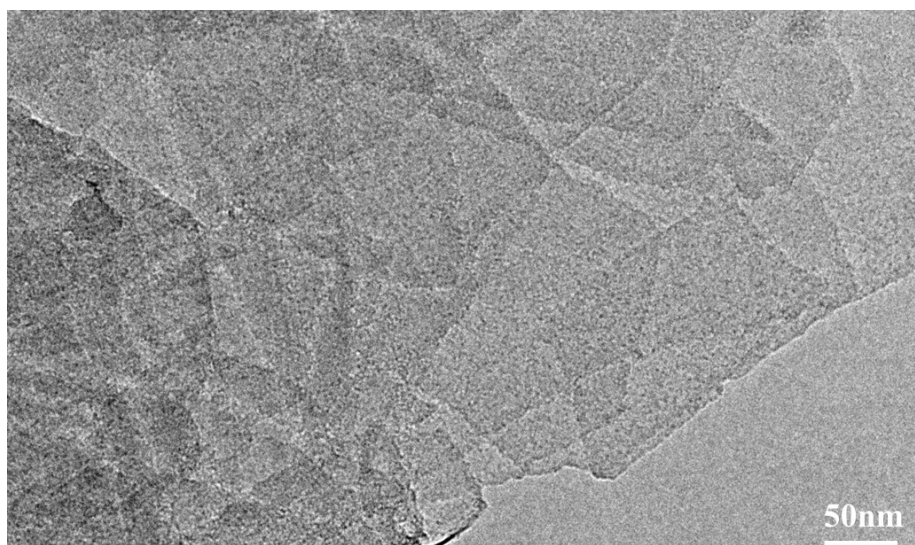


Fig S2. TEM image of the MXene nanosheets.

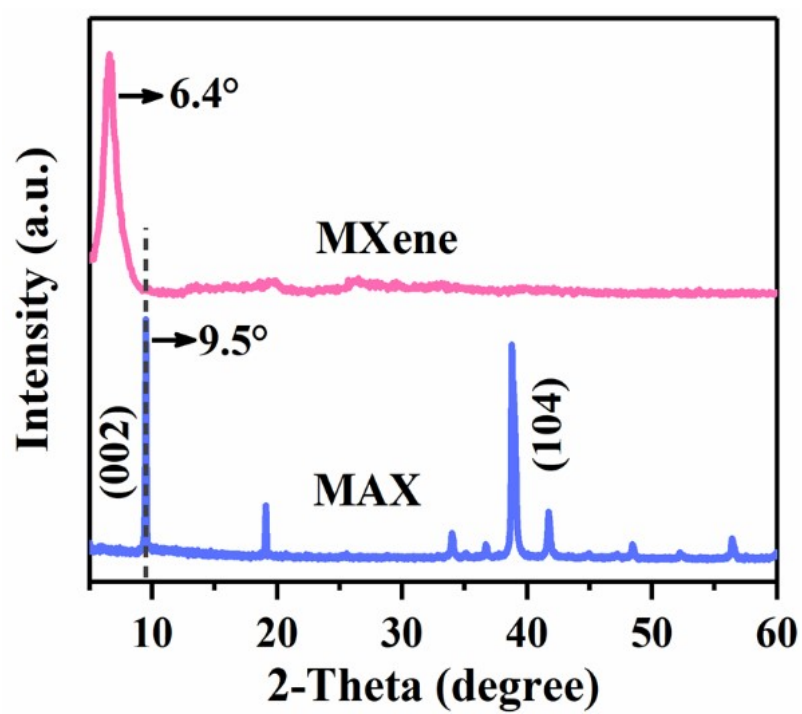


Fig S3. XRD patterns of $\text{Ti}_3\text{C}_2\text{T}_x$ (MAX phase) and MXene.

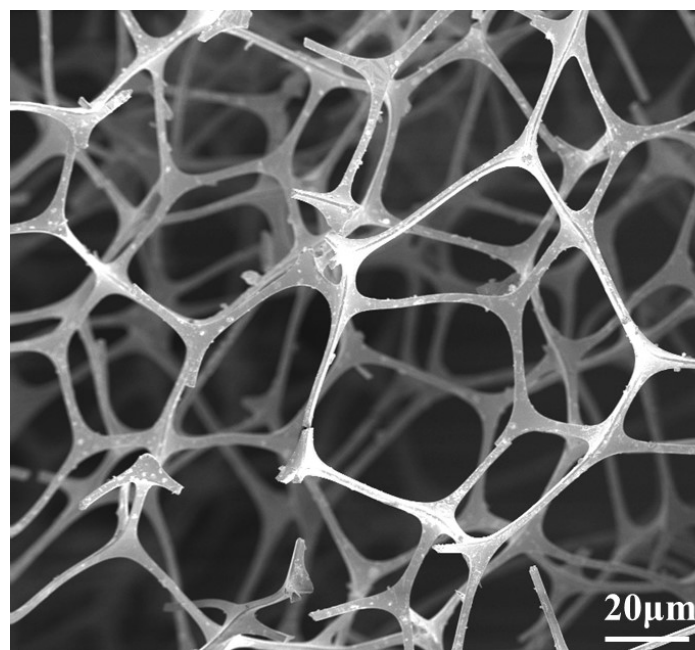


Fig S4. SEM images of MXene@MS.



Fig S5. Physical photo of MXene@MS after annealing at 440°C.

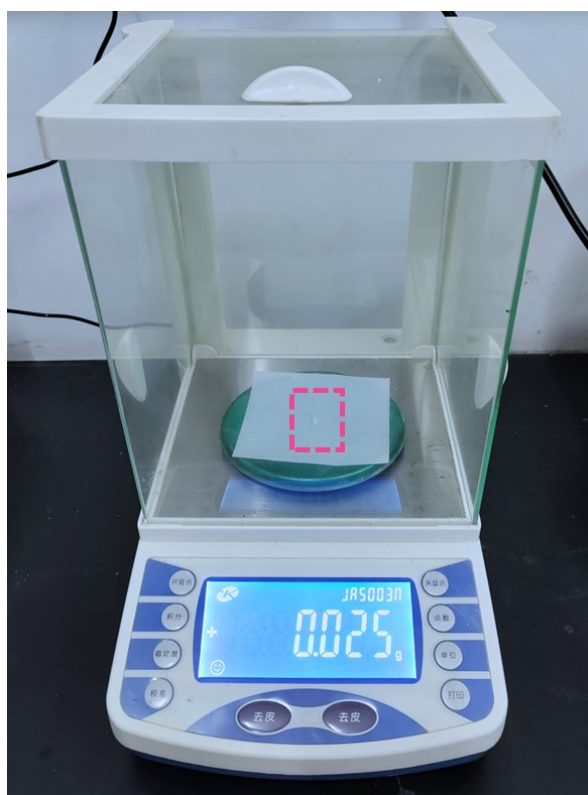


Fig S6. Optical photograph of the weighing of polystyrene particle.

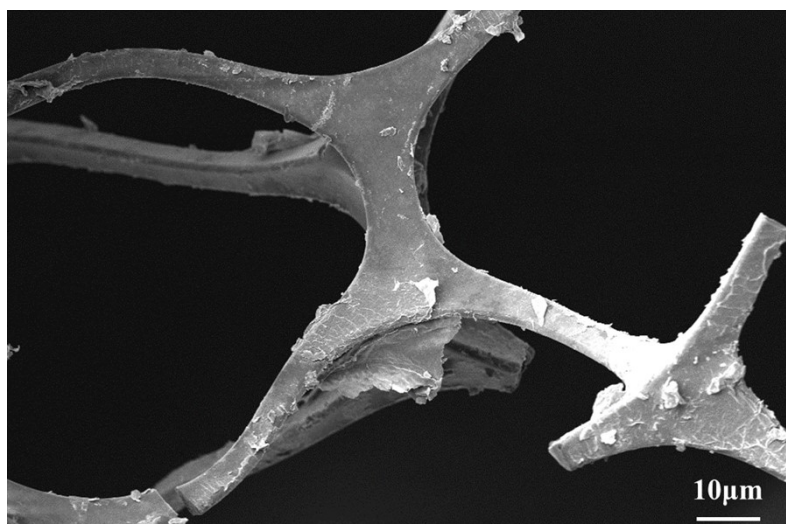


Fig S7. SEM image of T-MXene@MS sensor after cyclic testing.

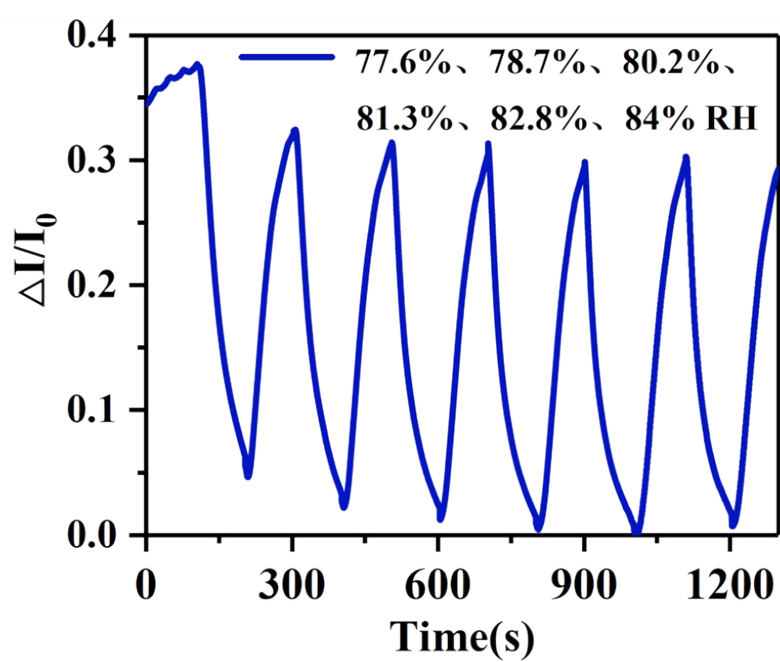


Fig S8. Dynamic current variation of T-MXene@MS sensors at different relative humidities.

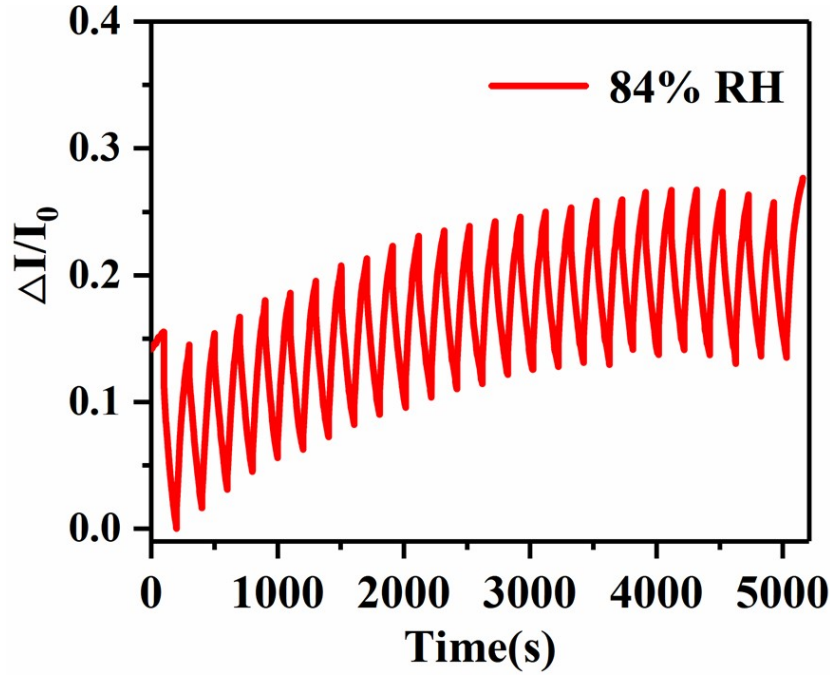


Fig S9. Repeat performance at 84% RH for annealed sensor.

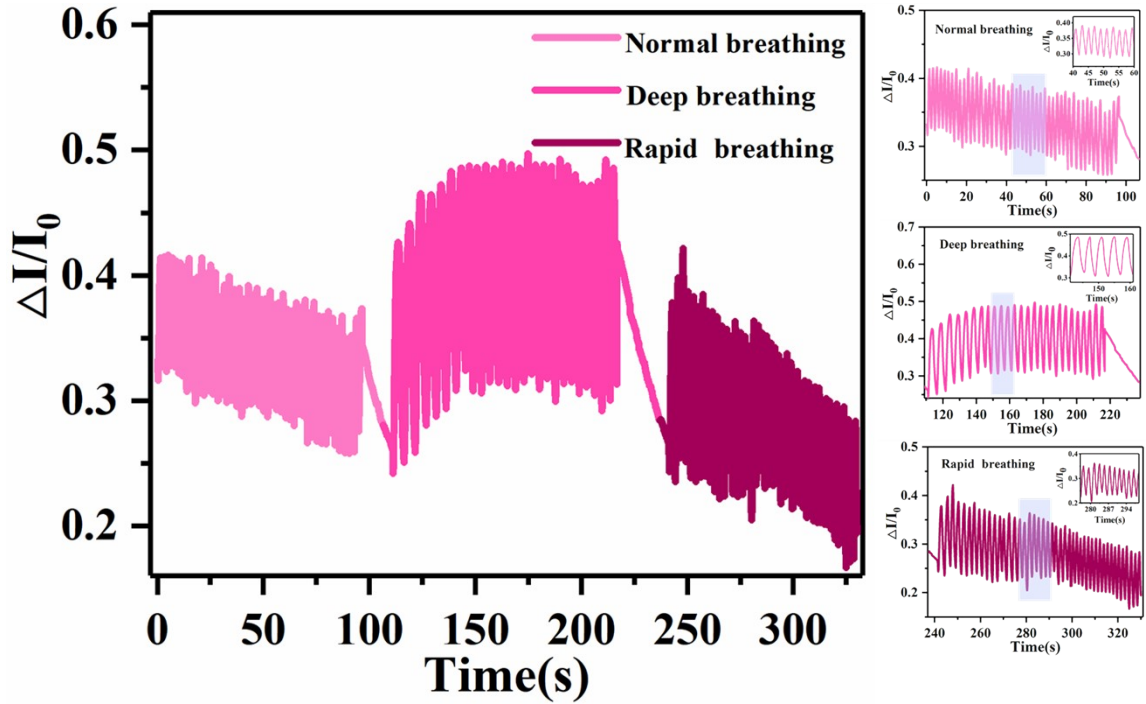


Fig S10. Three different respiratory response curves of the MXene@MS sensor without annealing treatment.

Table S1. The sensitivity of different MXene@MS sensors at 0-15 kPa.

Pressure range	The sensitivity of MXene@MS			
	Without annealing	T-200 °C	T-280 °C	T-360 °C
0-2 kPa	0.06 kPa ⁻¹	0.55 kPa ⁻¹	2.28 kPa ⁻¹	0.17 kPa ⁻¹
2-5 kPa	0.27 kPa ⁻¹	2.0 kPa ⁻¹	4.36 kPa ⁻¹	0.56 kPa ⁻¹
5-15 kPa	0.5 kPa ⁻¹	3.4 kPa ⁻¹	9.97kPa ⁻¹	0.35 kPa ⁻¹