Electronic Supplementary Information

In-situ growth of enzyme-inorganic hybrid nanoflowers on the paper strips for the visual detection of salivary glucose

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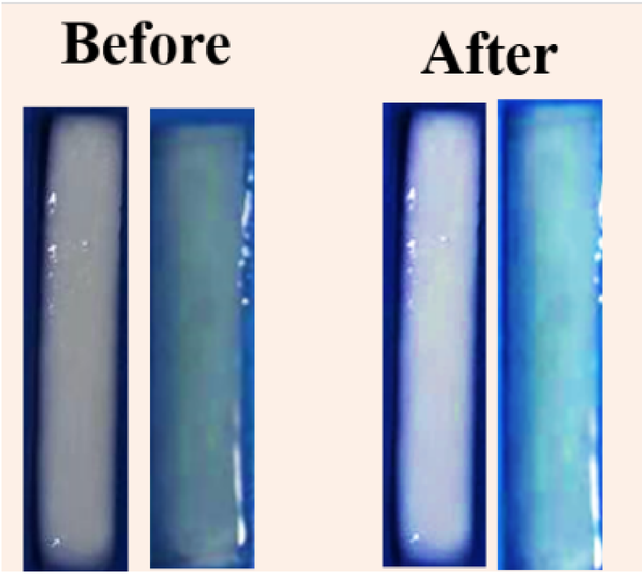

Fig. S1. Changes before and after picture processing.

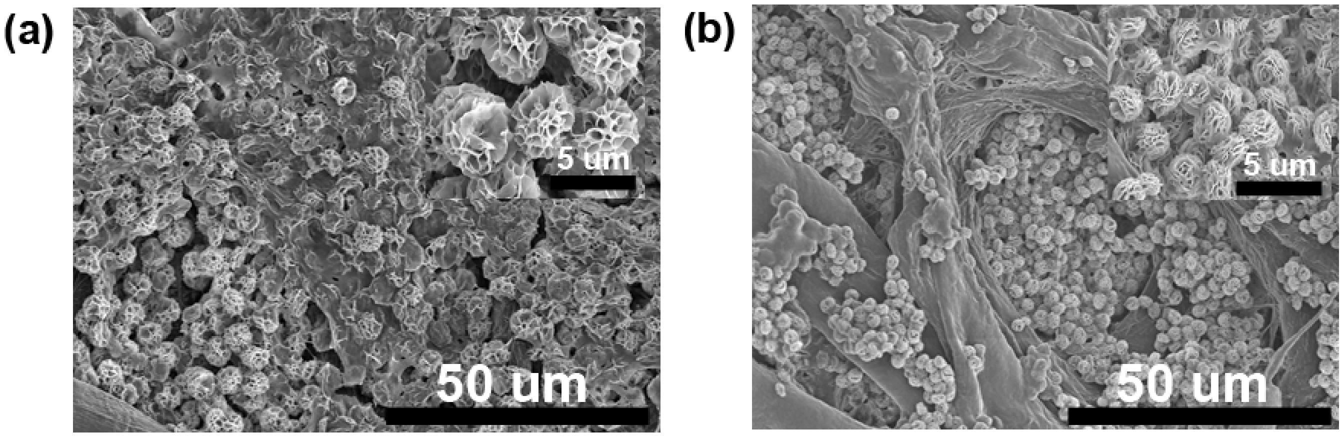

Fig. S2. SEM images of (a) in-situ growth of GO_x@HNF on the paper strip, (b) in-situ growth of HRP@HNF on the paper strip.

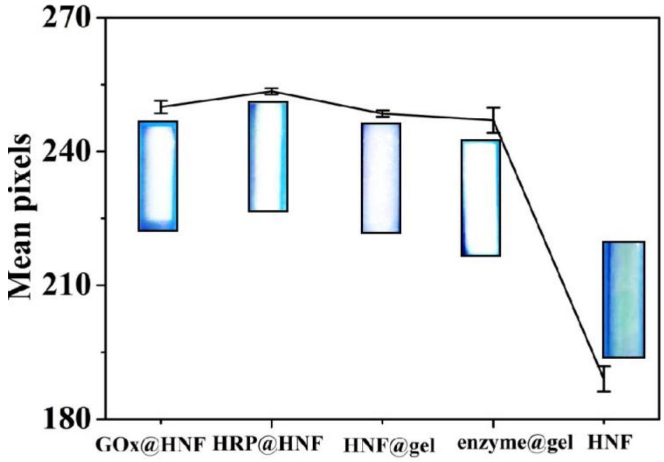

Fig. S3. Color changes on the paper strip combined with GO_x@HNF-based paper strip, HRP@HNF-based paper strip, HNF@paper strip, enzyme@gel@paper strip and HNF-based paper strip after adding 50 mg/L glucose, respectively.

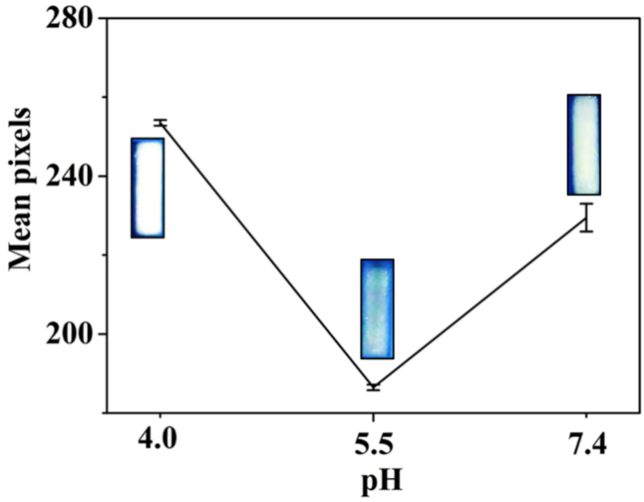

Fig. S4. The effect of pH value on glucose detection assay.

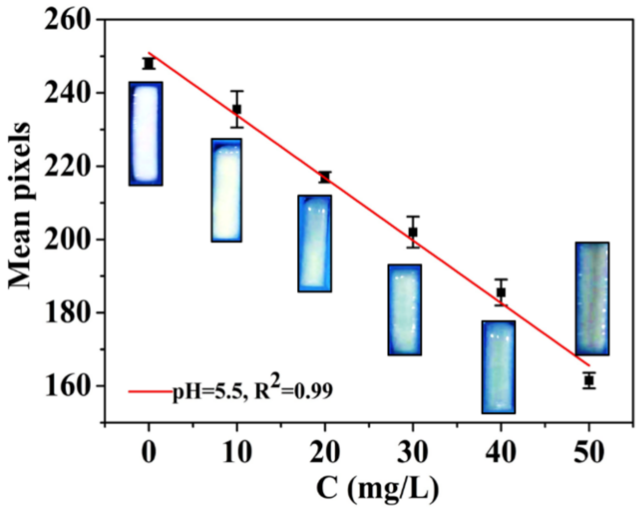

Fig. S5. Linear equation of glucose detection.

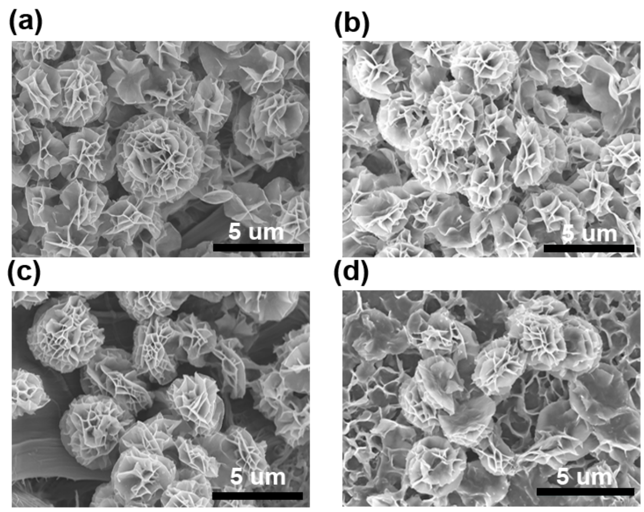

Fig. S6. SEM images of the HNF-based paper strip after different days of storage: (a) 7 days, (b) 20 days, (c) 45 days, (d) 60 days.

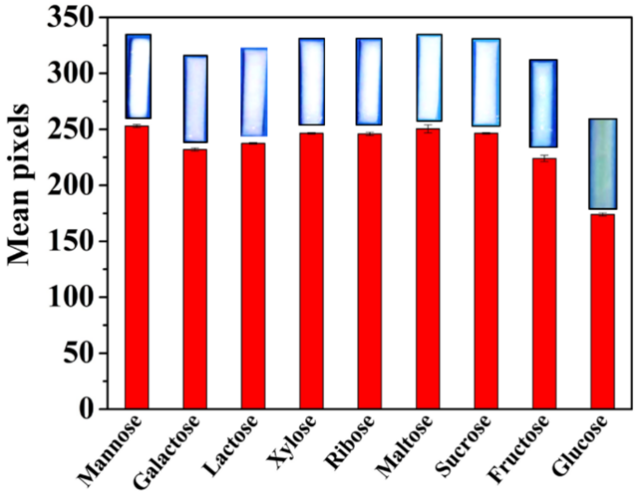

Fig. S7. The specificity of HNF-based paper strip. The concentrations of interferences substance (glucose, mannose, galactose, lactose, xylose, ribose, maltose, sucrose, and fructose) are all 50 mg/L.

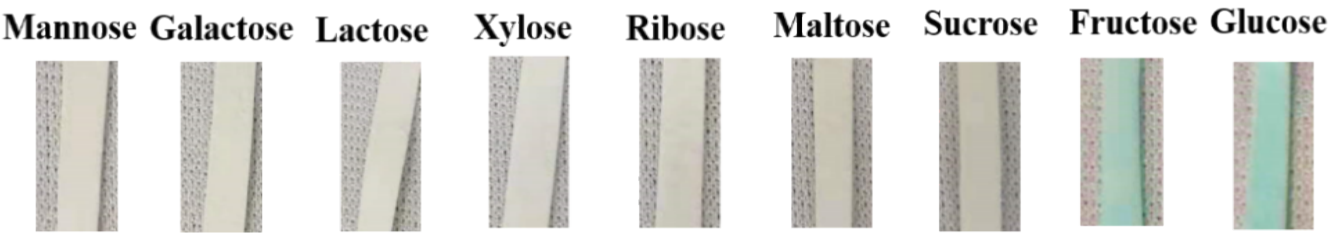

Fig. S8. The color change of dry paper strip after adding different glucose solution.

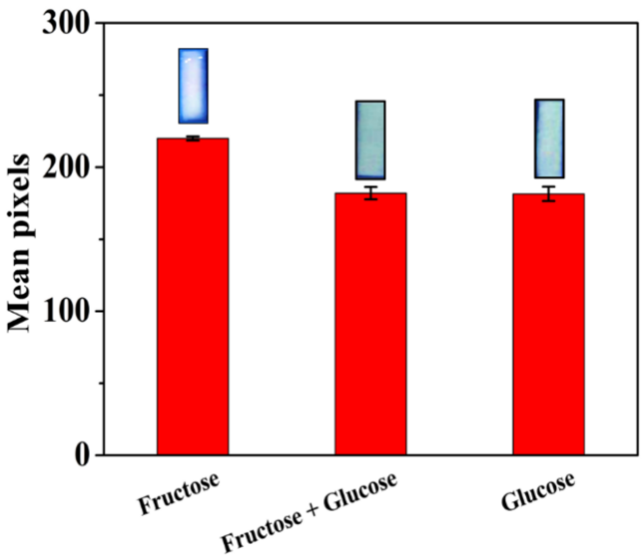

Fig. S9. The specificity of the HNF-based paper strip for 50 mg/L glucose solution containing 10 mg/L fructose.

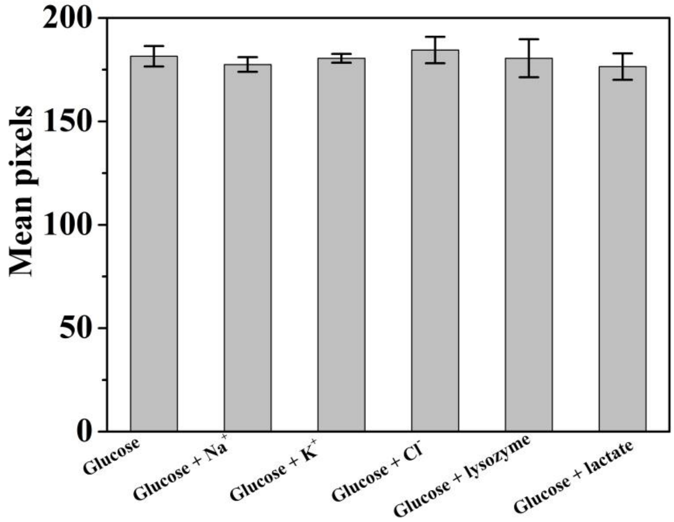

Fig. S10. The specificity of the HNF-based paper strip for 50 mg/L glucose solution containing 1.84×10^3 mg/L Na^+, 7.8×10^2 mg/L K^+, 3.55×10^3 mg/L Cl^-, 1.06×10^3 mg/L lysozyme and 2.25×10^2 mg/L lactate, respectively.

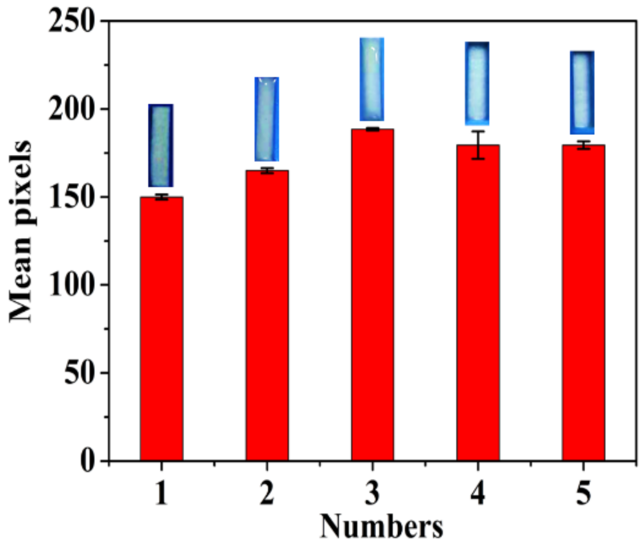

Fig. S11. The inter-batch of repeatability of HNF-based paper strip.

Table R1. Comparison of analytical properties of the HNF-based paper strip glucose sensor with other detection methods

Detection	Glucose-	Detection	Limit of	Response	Specimen	Reference

method	responsive material	range	detection	time		
Electrochemical	MnO_2/MWNTs	1.8 - 5040 mg/L	------	10 s	0.1 M NaOH	1
	Pt-Pb	0 - 3600 mg/L	------	------	7.4 PBS	2
	GO*x*	18 – 3240 mg/L	156.6 mg/L	15 min	PBS, 100% human serum	3
Optical	GO*x*	0 – 540 mg/L	36 mg/L	------	7.0 PBS, 20% human serum	4
	GO*x*	0 – 360 mg/L	0.09 mg/L	30 min	7.4 PBS, 10% serum	5
	PBA	0 – 18000 mg/L	------	90 min	7.4 PBS	6
	BA	0 – 180 mg/L	------	60 min	7.4 TES buffer, photosynthetic organism	7
Paper strip	GO*x*-HPR	54 – 180 mg/L	38 mg/L	30 min	7.0 PBS, 100% human serum	8
	GO*x*-HPR	180 – 1980 mg/L	54 mg/L	6 min	7.0 PBS, 100% human serum	9
	GO*x*	18 – 3600 mg/L	18 mg/L	5 min	7.4 PBS, 100% human serum	10
	GO*x*-HPR	0 – 50 mg/L	10 mg/L	60 s	100% human saliva	**Our work**

Table S2. Recovery of glucose in diabetic human saliva with the proposed sensor.

Saliva sample	Standard	HNF embedded strip	Recovery (%)

	(Ion chromatography)		
1	19.9 mg/L	17.9 mg/L	90
2	10.0 mg/L	10.03 mg/L	100
3	47.2 mg/L	46.8 mg/L	99
4	40.2 mg/L	37.8 mg/L	94
5	38.8 mg/L	34.9 mg/L	90

Reference:

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