Supporting Information

Fluorescence sensing for chloride ions in water based on wavelength shifts of hexane-dispersed $CsPbBr_3$@silicone

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Measurement of Cl^- concentration in sweat samples by traditional argentometric method

Due to the low sample volume, the collected sweat was diluted 10 times before testing. The 3 mL sample solution and 120 µL K_2CrO_4 (Indicator) were added in a 10 mL conical flask. The $AgNO_3$ standard solution (5.000 mM) was slowly added to the conical flask through a burette and the solution was stirred. When the color of the solution changed from clear yellow to stable red, the volume of $AgNO_3$ was recorded. The concentration of Cl^- in the sample was obtained from:

$$C_{cl^-} = \frac{5.000 \times V_{(AgNO_3)}}{3} \text{ mM}$$

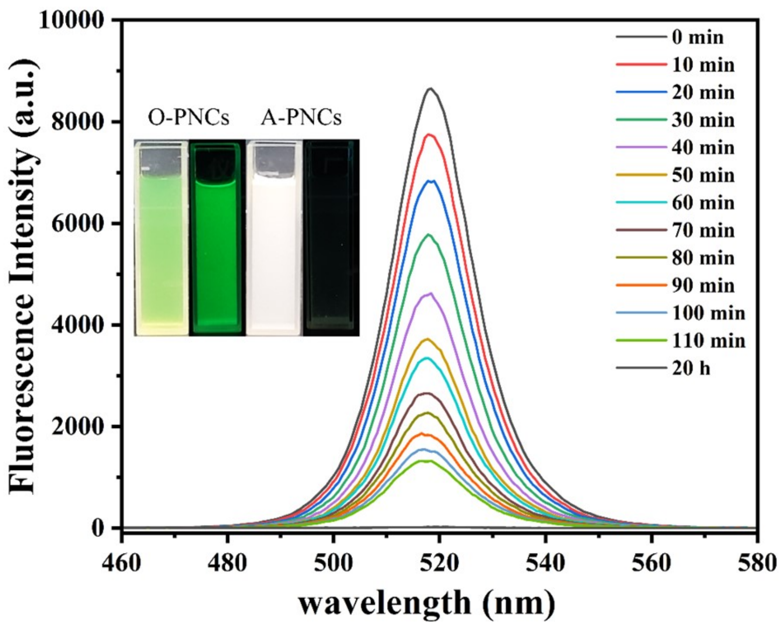

Figure S1 Fluorescence emission spectra of O-PNCs in water, inset show solution colors under natural light and 365 nm UV light, with O-PNCs on the left side and A-PNCs on the right side.

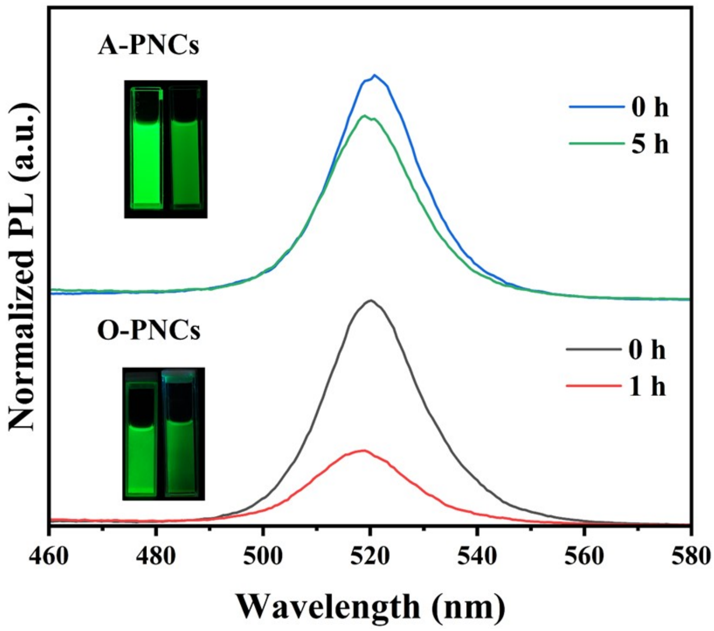

Figure S2 Fluorescence emission spectra of O-PNCs and A-PNCs in ethanol, the inset shows solution colors under 365 nm UV light.

Table S1. An overview of recently reported nanomaterial-based optical methods for the determination of Cl^- in aqueous phases.

Materials used	Solvents for nanomaterials	Fluorescence sensing type	Visual resolution	Response time	LOD	Ref
GQD	Water	Intensity based	Low	5 min	10 mM	[15]
Supramolecular network		Intensity based	Low		24.9 μM	[16]
$CsPbBr_3$	Hexane	Wavelength based	High	5 min	3.0 mM	[24]
$CsPbBr_3$-SiO_2	Ethanol	Wavelength based	High	15 min	0.05 mg/g	[27]
$CsPbBr_3$-OPA	Water	Wavelength based	High	5 min	0.34 mM	[28]
$CsPbBr_3$@$CsPb_2Br_5$	Water	Wavelength based	High	20 s	3.2 μM	[29]
$CsPbBr_3$-ACD	Ethanol	Wavelength based	High	1 min	3.2 μM	[30]
DUT-101 and Ag^+/Eu^{3+} @UIO-67		Intensity based	High		0.1 mM	[53]
$CsPbBr_3$-APTMS	Hexane	Wavelength based	High	1 min	0.188 mM	This work

Table S2. Detection of Cl^- in sweat based on traditional argentometric method.

sample	Sample volume (ml)	$AgNO_3$ volume (ml)	$AgNO_3$ concentration (mM)	Sample Cl^- concentration (mM)	RSD (%)
1	3.000	2.256	5.055	3.801	0.35
2	3.000	1.467	5.055	2.472	0.51