Electronic Supporting Information

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Field analysis Cr(VI) in water samples by a smartphone-based ultralong absorption path reflection colorimetric device

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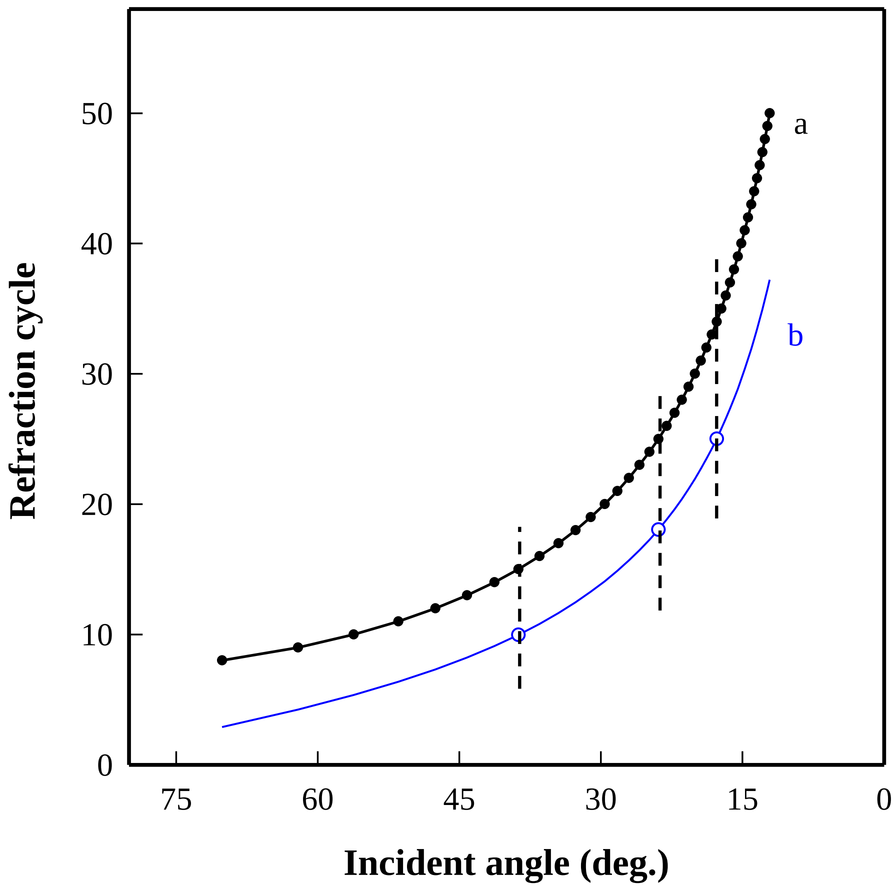

Fig. S1 Theoretical dependence of the reflection cycle on incident angle according to eq. 4 by using n=1.33, L=16 cm, d=1 cm. (a): in cell fill with pure water, (b) in empty cell. The three empty points in curve b occurred at the close incident angle used in curve a.

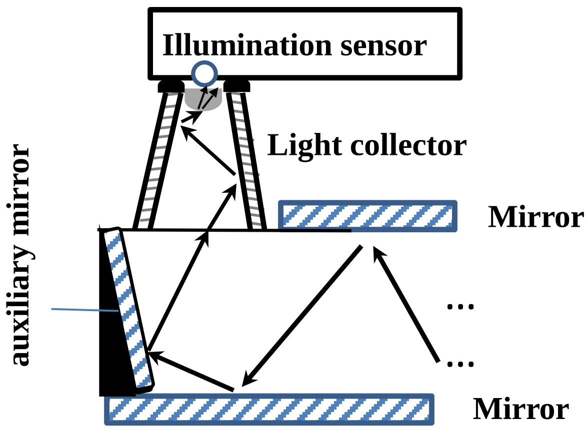

Fig.S2 Schematic drawing of the light path for non-direct light beam guided by the auxiliary reflection mirror and light collector in the potable colorimetric device.

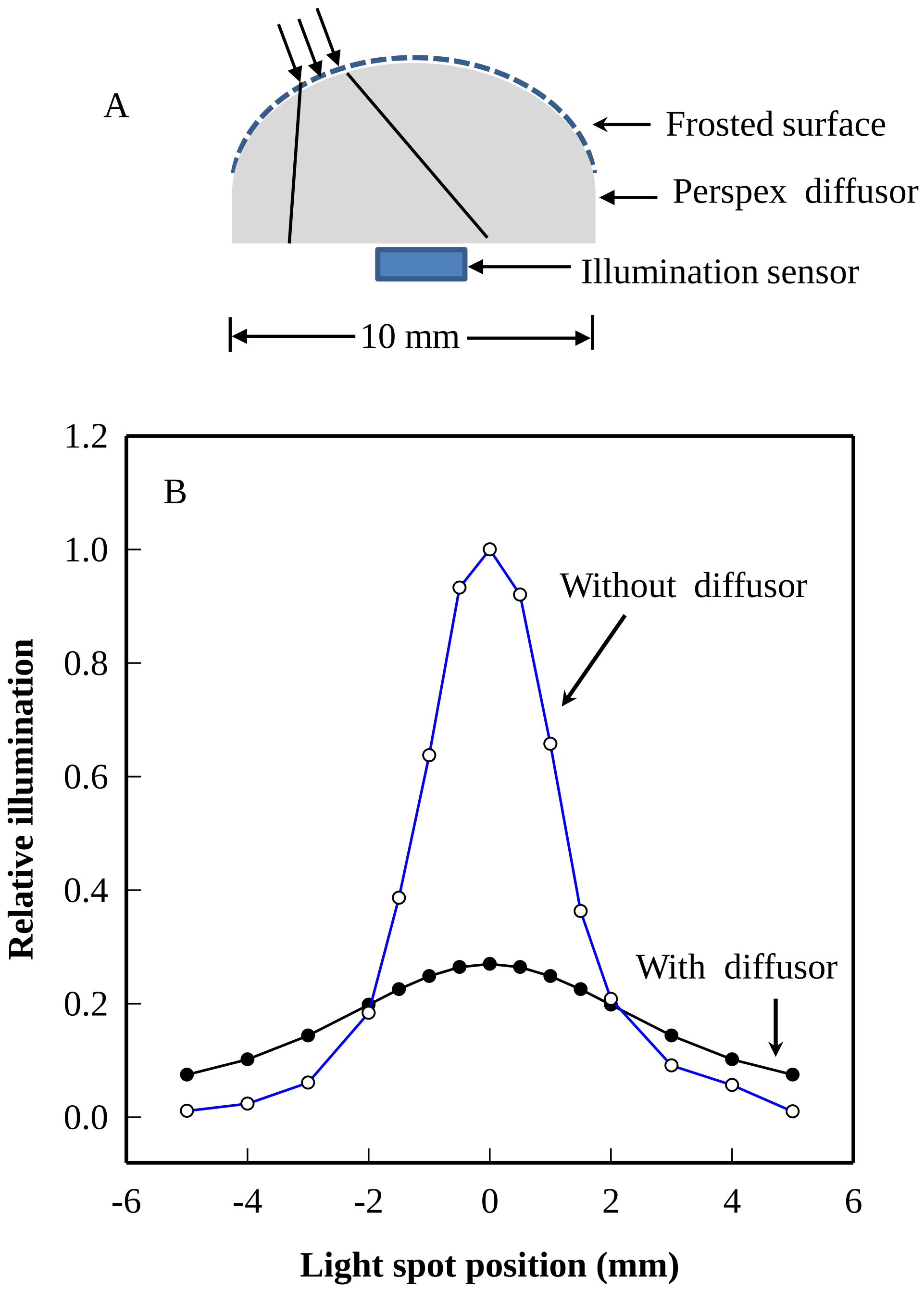

Fig.S3 (A) Schematic drawing of the function of the diffusor, (B) influence of the light spot position on the readout of the illumination sensor.

Table S1 Comparison of Cr(VI) concentration in water samples determined by lab spectrophotometer (b=10 cm) and smartphone-based colorimetric device (b=83 cm) on site.

Samples	Cr(VI) spiked ($\mu g\ L^{-1}$)	Lab spectrophotometer ($\mu g\ L^{-1}$)	Proposed portable device ($\mu g\ L^{-1}$)
No.1(Xiaoqing River)	0	3.22 ± 0.34	3.06 ± 0.15
	10.00	12.61± 0.56	13.34± 0.37
No.2 (Xiaoqing River)	0	4.63 ± 0.39	4.39 ± 0.18
	10.00	14.98± 0.61	13.92 ± 0.40
No.3 (Xiaoqing River)	0	6.63 ± 0.43	6.72 ± 0.22
	10.00	16.41± 0.76	17.04 ± 0.39
No.4 (Moat)	0	nd	nd
	10.00	10.26 ±0.41	10.41 ± 0.29
No.5 (Moat)	0	nd	nd
	10.00	9.82 ± 0.43	9.73 ± 0.31
No.6 (Moat)	0	nd	nd
	10.00	9.68 ± 0.37	10.12 ± 0.28

* nd: not detected