Supplementary Material

A green, rapid and efficient dual-sensors for highly selective and sensitive detection of cation (Hg^{2+}) and anion (S^{2-}) ions based on CMS/AgNPs composites

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zichaoli@qdu.edu.cn (Z.L.);
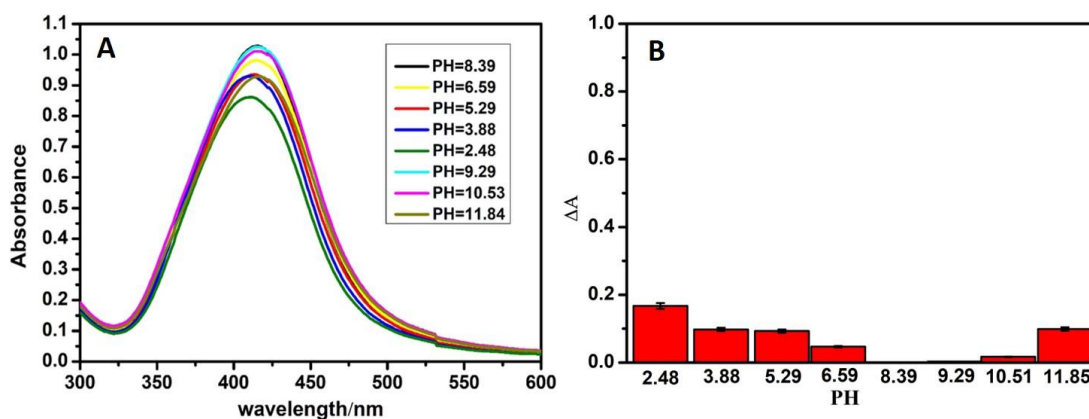** Correspondence: qunli@qdu.edu.cn (Q.L.); Tel.: +86-532-8595-0705 (Q.L.)*

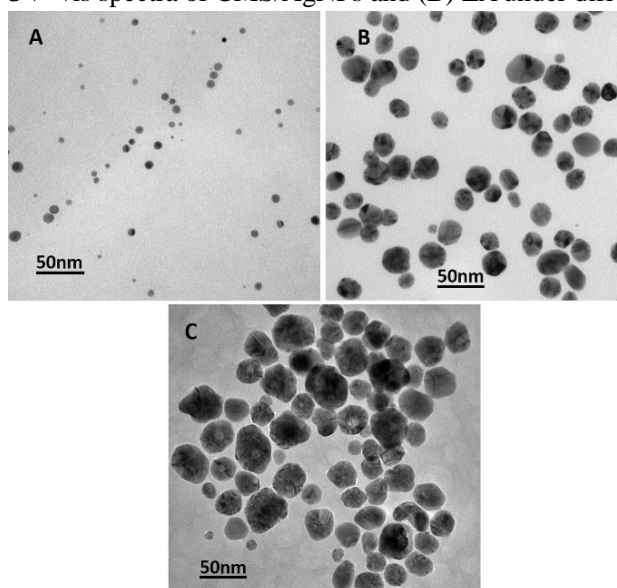**Fig. S1** (A) UV–vis spectra of CMS/AgNPs and (B) ΔA under different pH

Fig. S2 TEM images of different reducing agent: (A) NaBH$_4$, (B) Sodium Citrate and (C) Glucose

Table S1 Comparison of the proposed Hg^{2+} detection method with different reducing agent

Reducing agent	Size of AgNPS/(nm)	Linear range/(μM)	LOD/(μM)
$NaBH_4$	～10	20-120	0.32
Glucose	～40	0-60	0.12
Sodium Citrate	～30	0-50	0.013
Vc	～20	0-50	0.018

Table S2 Comparison of the proposed Hg^{2+}/S^{2-} detection method with other reported methods

Methods	Probe	Ions	Linear range/(μM)	LOD/nm	Ref.
Colorimetric	β-CD AgNPs	Hg^{2+}	2.6-250	37.5	[1]
		S^{2-}	0.03-0.3	0.9	
Colorimetric	SSA-AgNPs	Hg^{2+}	0-5	14	[2]
		S^{2-}	0-0.8	4	
Colorimetric	AUNSs	Hg^{2+}	0.1-100	0.05	[3]
Electro chemistry	AgNPs	Hg^{2+}	5.0-755	0.19	[4]
Colorimetric	AgNPs	Hg^{2+}	0.5-5.0	58	[5]
Colorimetric	SA-AgNPs	Hg^{2+}	0.025-60	5.29	[6]
Fluorescence	NCDs-RhB@COF	Hg^{2+}	0.048-10	15.9	[7]
Electro chemistry	SPCE/Go/AuNPs	S^{2-}	3-40	300	[8]
Colorimetric	Cip-AgNPs	S^{2-}	-	16	[9]
Colorimetric	AgNPs	S^{2-}	3-40	300	[10]
Colorimetric	CMS/AgNPs	Hg^{2+}	0-50	18	This work
		S^{2-}	15-70	240	

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