

Global Challenges

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Supporting Information

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**Chiral MoS₂ Quantum Dots: Dual-Mode Detection
Approaches for Avian Influenza Viruses**

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Supporting Information

Chiral MoS₂ Quantum Dots: Dual-Mode Detection Approaches for Avian Influenza Viruses using Magnetochirofluorescent Nanohybrids

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Confirmation of antibodies specificity towards target virus

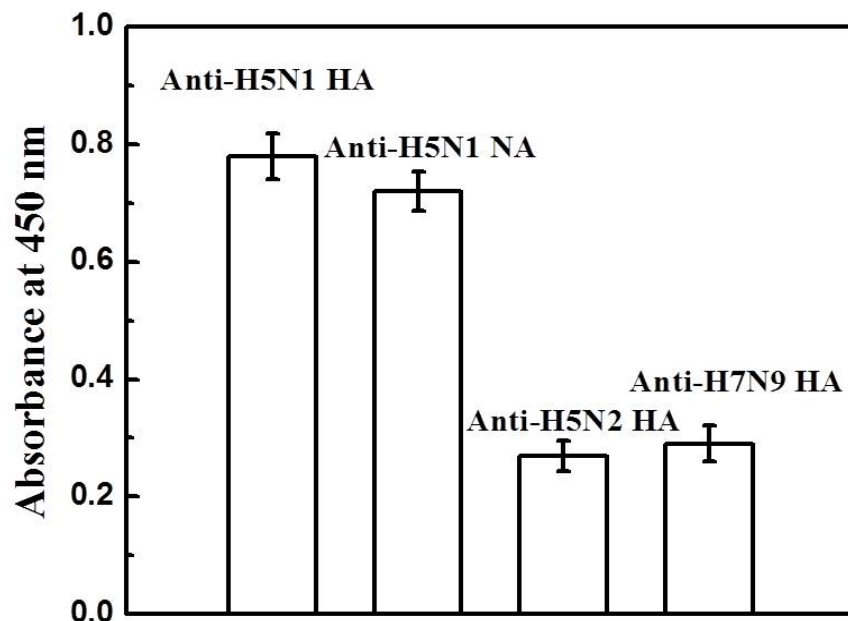


Figure S1: ELISA results of antibodies specificity towards target viruses.

Binding confirmation of anti-H5N1 HA Ab 135382 with QDs and anti-H5N1 NA Ab with MNPs

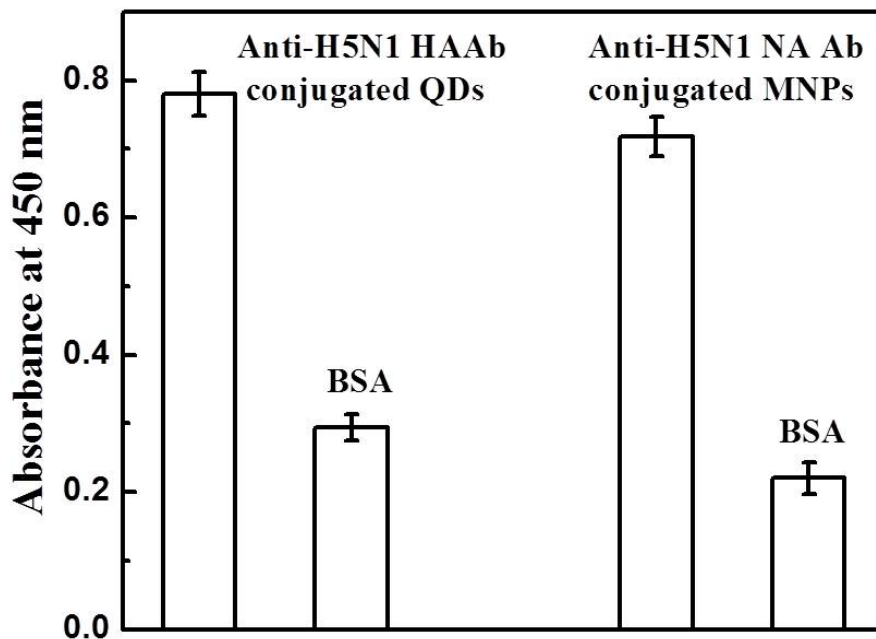


Figure S2: ELISA results of antibodies binding with MoS₂ QDs and MNPs.

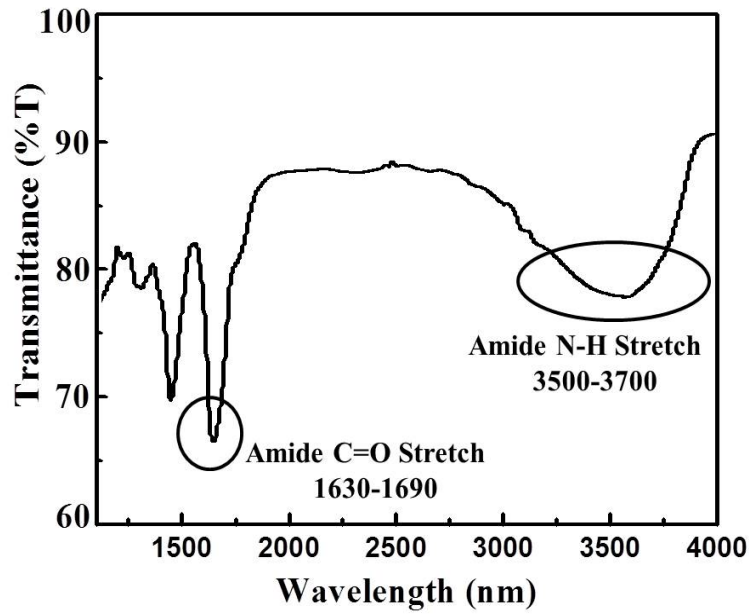


Figure S3: FTIR spectra of antibodies conjugated MNPs.

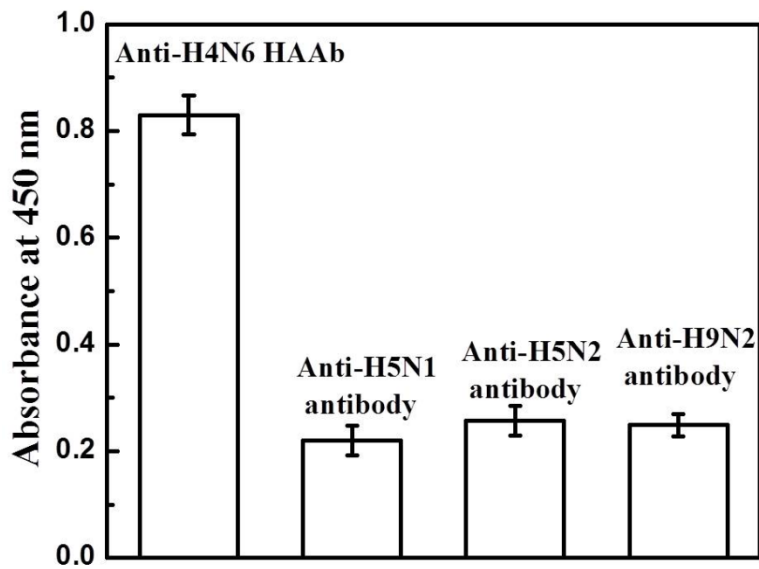


Figure S4: ELISA results of antibodies specificity towards avian influenza A (H4N6) virus.

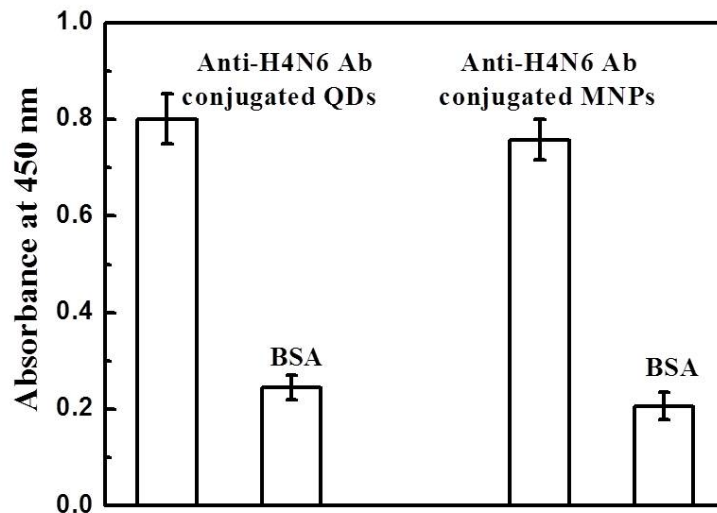


Figure S5: Binding confirmation of antibodies with MoS₂ QDs and MNPs through ELISA method.

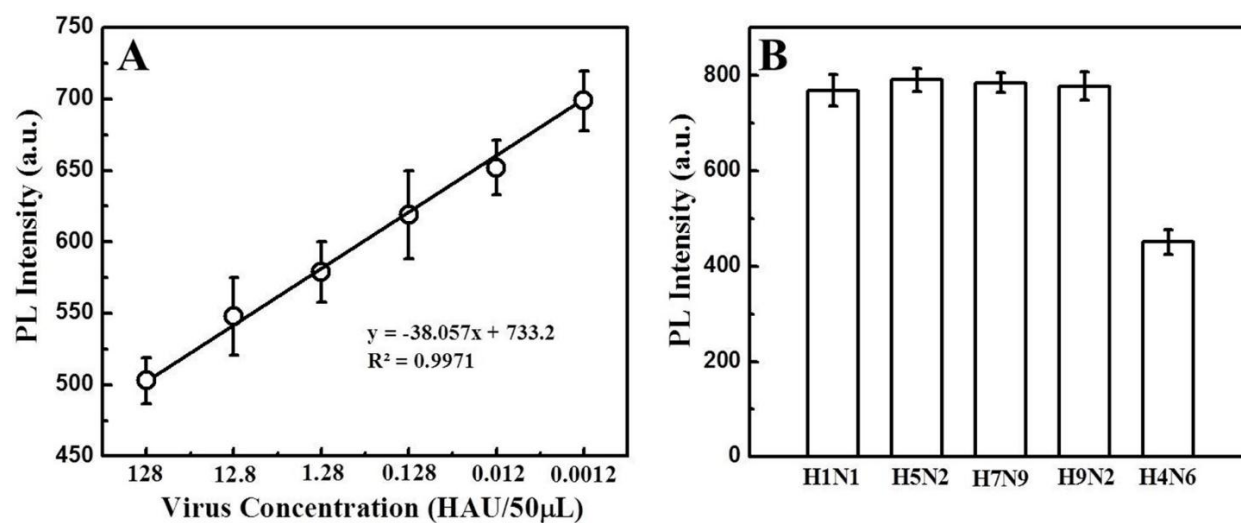


Figure S6: Fluorescence detection of virus culture sample: (A) calibration curve of avian influenza virus A (H4N6) concentration VS fluorescence responses; and (B) selectivity results of detection in chicken blood media.

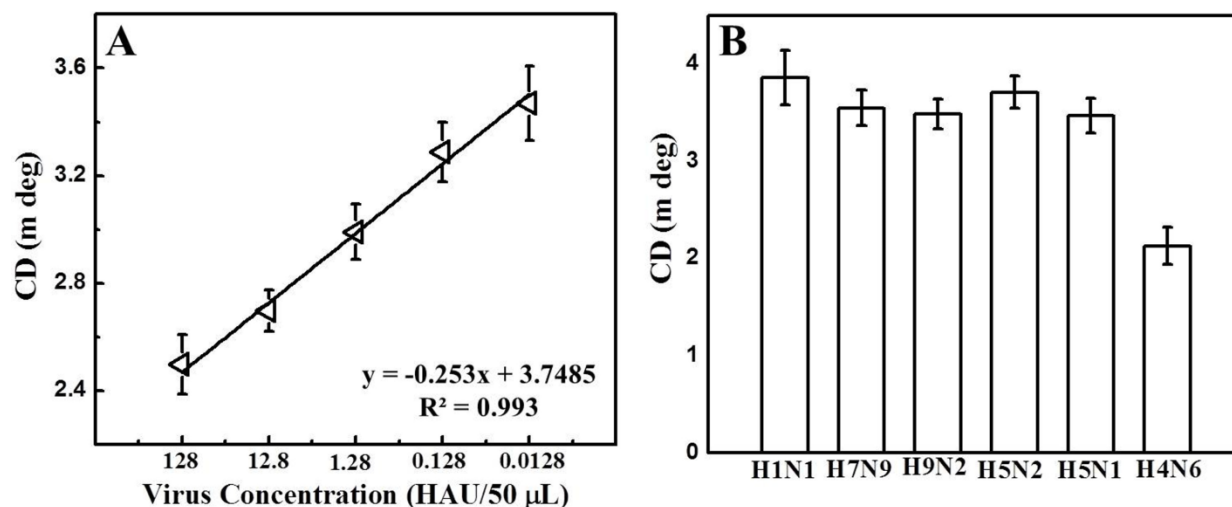


Figure S7: Chiral-based optical detection of virus culture sample: (A) calibration curve of avian influenza virus A (H4N6) concentration VS chiral responses; and (B) selectivity results of chiral-based detection in chicken blood media.

Table S1: Step by step analysis of zeta potential value

	Zeta potential (mV)		
	MoS ₂ QDs	after conjugation with Poly-l lysine (PLL)	after conjugation with antibodies
MoS ₂ QDs	-20.52	+10.31	-3.83

Table S2: Comparison of avian influenza virus A (Avian/Vietnam/1203/04) (H5N1) detection using different methods

Detection method	Virus concentration (pg/mL)								
	10^7	10^6	10^5	10^4	10^3	10^2	10	1	0
Proposed PL sensor	+	+	+	+	+	+	+	-	-
Proposed CD sensor	+	+	+	+	+	+	-	-	-
Conventional ELISA	+	+	+	+	+	-	-	-	-
Commercial kit	+	+	+	+	+	-	-	-	-

Table S3: Comparison study of avian influenza A (H4H6) virus detection

Detection method	Virus concentration (HAU/ 50 μ L)						
	128	12.8	1.28	0.128	0.0128	0.00128	0.000128
Proposed PL sensor	+	+	+	+	+	+	-
Proposed CD sensor	+	+	+	+	+	-	-
Commercial kit	+	+	+	+	-	-	-