Supporting Information for

Ionophore-based pH Independent Detection of Ions Utilizing Aggregation-Induced Effects

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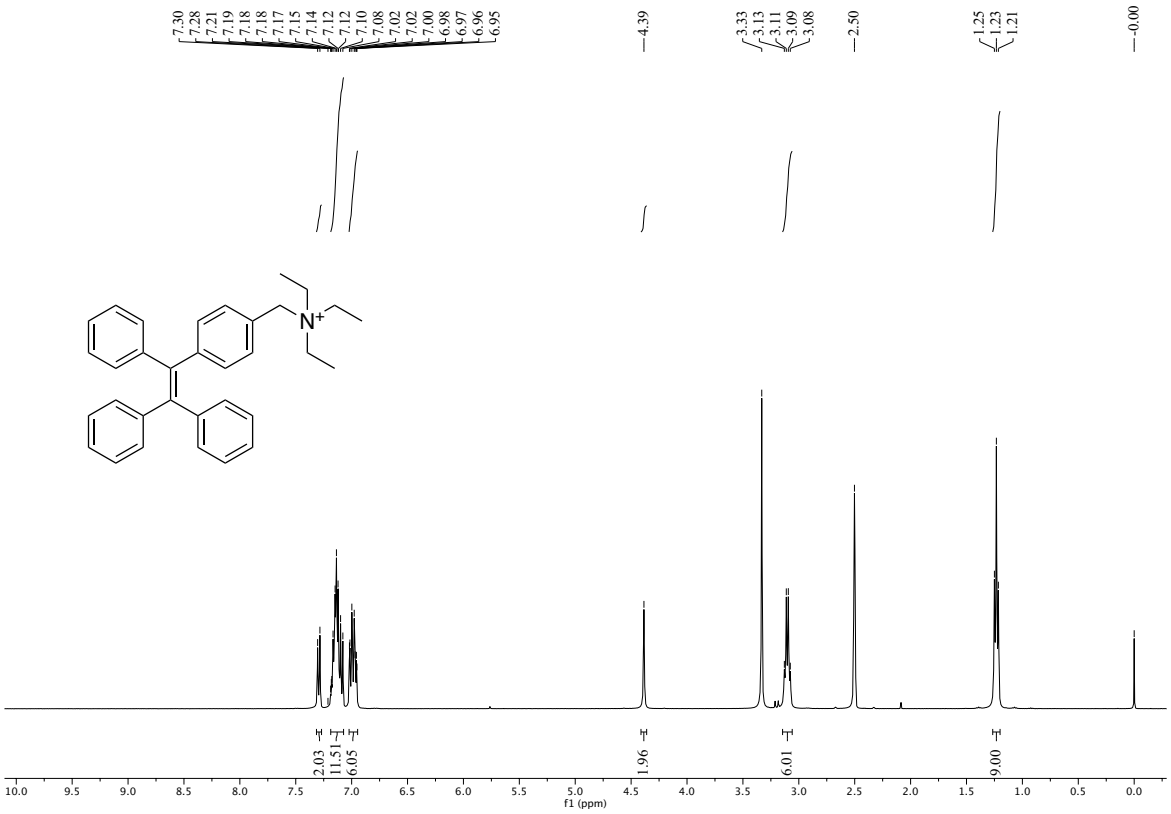
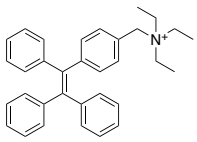
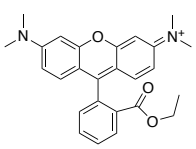
^{1}H-NMR of TPE$^+$

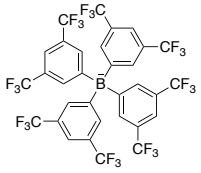




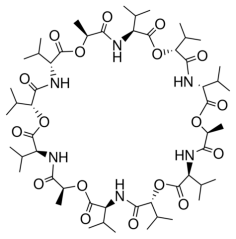
TPE$^+$



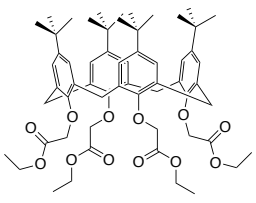
TMRE$^+$



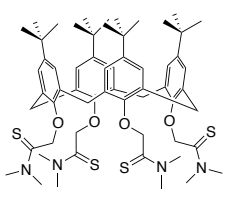
TFPB



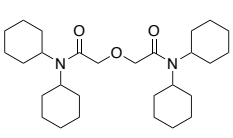
K$^+$ ionophore



Na$^+$ ionophore



Pb^{2+} ionophore



Ca^{2+} ionophore

Scheme S1. Chemical structures of the sensing components incorporated into the ion-selective nanospheres.

Table S1. Composition of the cocktail solutions used to prepare the eight ion-selective nanosensors.

(a) AIE-based nanosensors

	Ionophore		TFPB		TPE		F127	PVC	DOS
	mg /mL	mmol /mL	mg /mL	mmol /mL	mg /mL	mmol /mL	mg /mL	mg /mL	mg /mL
K^+	0.90	0.81	0.5	0.56	0.25	0.53	2	2	2
Na^+	1.00	1.00	0.5	0.56	0.25	0.53	2	2	2
Ca^{2+}	0.50	1.08	0.5	0.56	0.25	0.53	2	2	2
Pb^{2+}	1.00	0.95	0.5	0.56	0.25	0.53	2	2	2

(b) ACQ-based nanosensors

	Ionophore		TFPB		TMRE		F127	PVC	DOS
	mg /mL	mmol /mL	mg /mL	mmol /mL	mg /mL	mmol /mL	mg /mL	mg /mL	mg /mL
K^+	0.90	0.81	0.5	0.56	0.25	0.49	2	2	2
Na^+	1.00	1.00	0.5	0.56	0.25	0.49	2	2	2
Ca^{2+}	0.50	1.08	0.5	0.56	0.25	0.49	2	2	2
Pb^{2+}	1.00	0.95	0.5	0.56	0.25	0.49	2	2	2

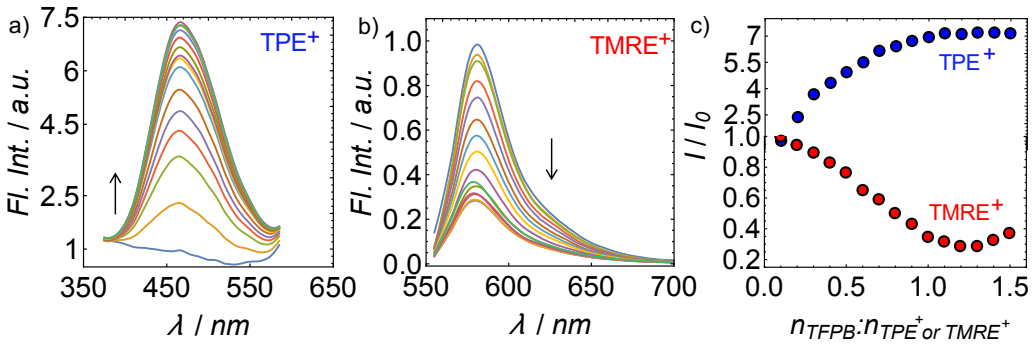


Figure S1. Fluorescence spectra of suspensions containing 1 μM of TPE^+ (a) or $TMRE^+$ (b) upon gradual increase of TFPB in the nanospheres. (c) Normalized emission (I/I_0) as a function of the ratio between the number of moles of added TFPB and the number of moles of TPE^+ (or $TMRE^+$). Arrows indicate the increase of TFPB.

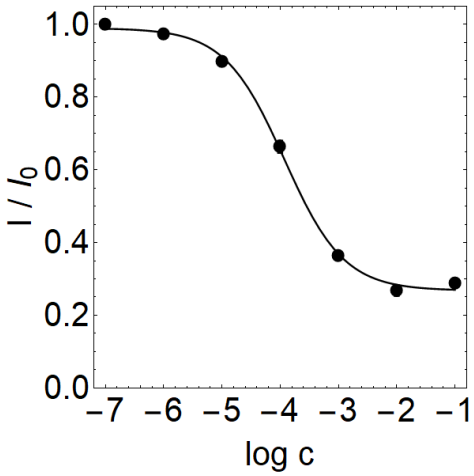


Figure S2. Fluorescence K^+ responses in de-ionized water of the nanospheres containing the K^+ ionophore valinomycin, TFPB, TPE^+. I_0 is the maximum emission intensity in blank solutions.

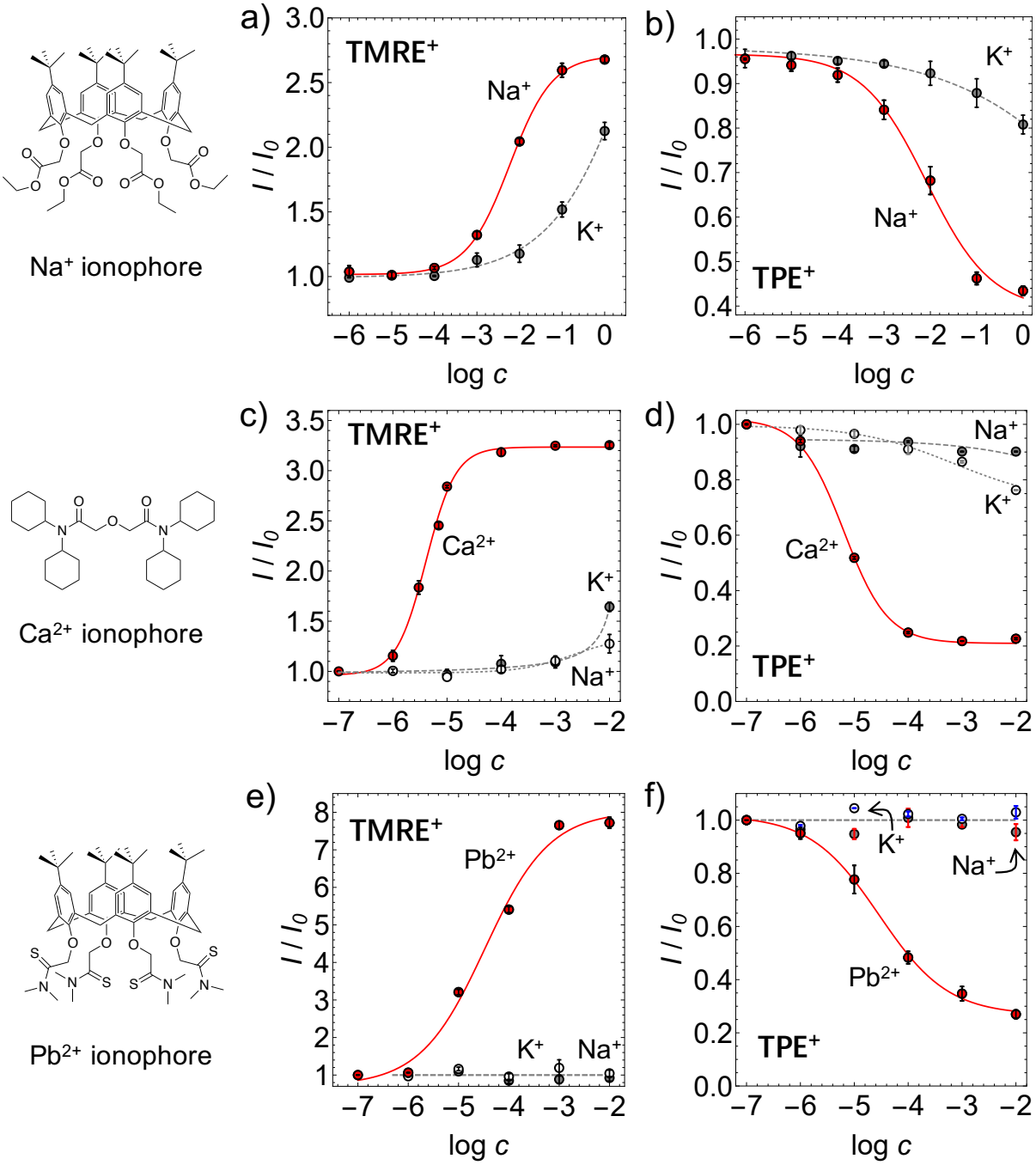


Figure S3. Responses of the ion-selective nanospheres containing different ionophores including sodium ionophore X, calcium ionophore II, and lead ionophore IV. Nanospheres containing $TMRE^+$ are shown in a), c), and e), while nanospheres containing TPE^+ are shown in b), d), and f). I_0 represents the maximum emission intensity in blank solutions without target ions. Error bars represent standard deviations from three separate measurements.

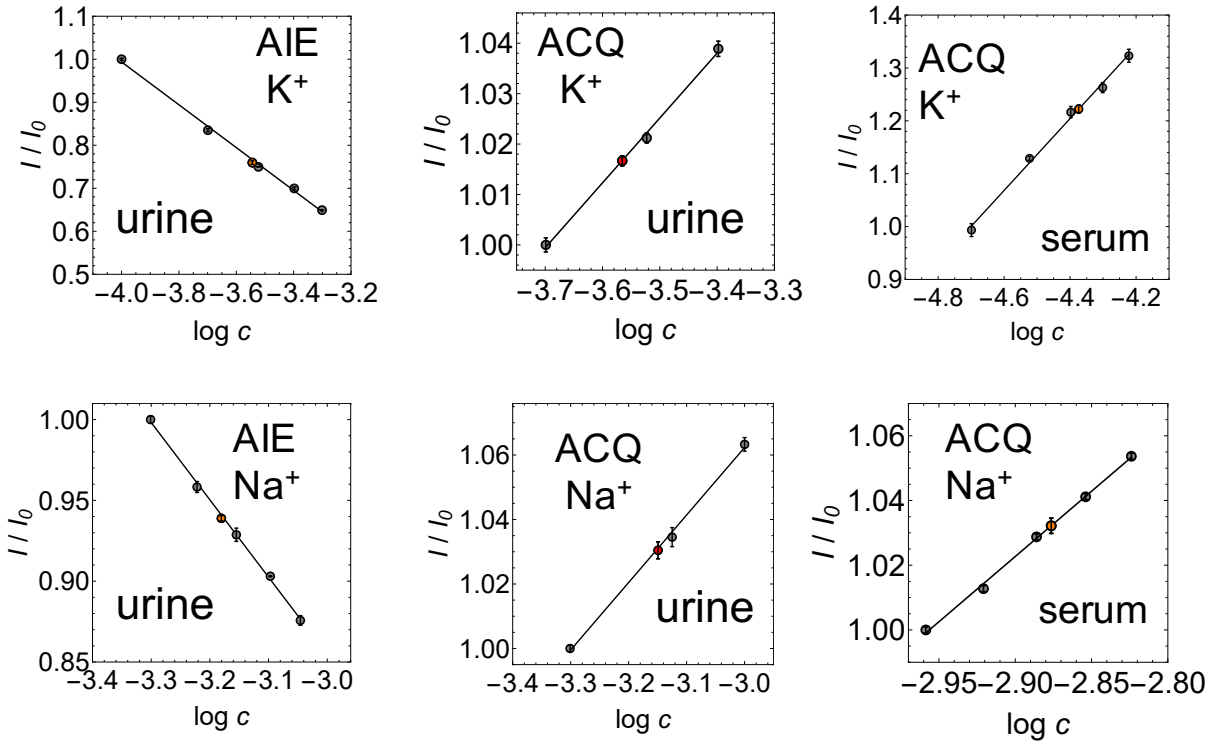


Figure S4. Calibrations for the measurements of sodium and potassium ion concentrations in urine and blood serum samples using the Na^+ and K^+ nanosensors in the AIE and ACQ modes, respectively. The orange dots represent signals from the samples. Error bars represent standard deviations from three separate measurements.