Supporting Information for

Potentiometric Detection of Glucose Based on Oligomerization with a Diboronic Acid Using Polycation as an Indicator

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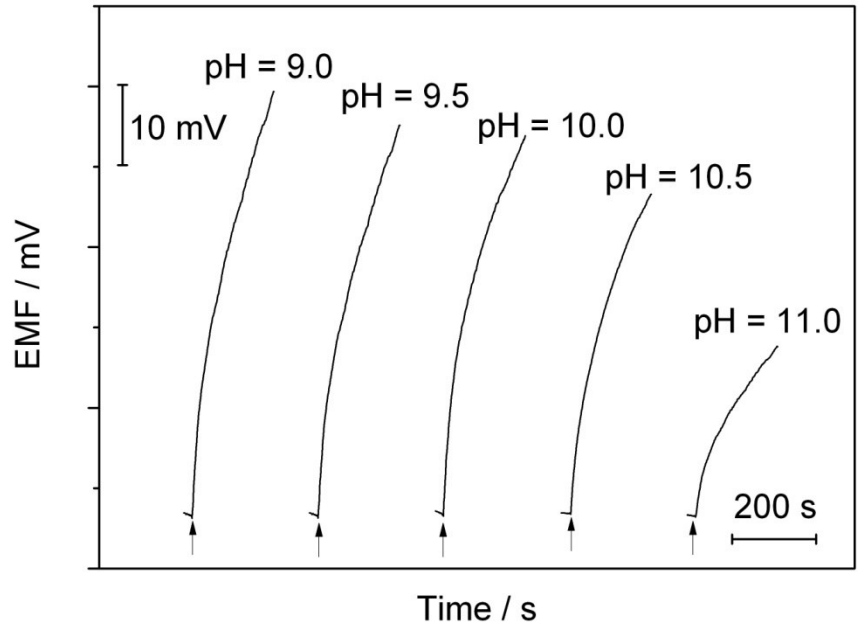

Fig. S1. Potential responses to 1.0 μg/mL PAPMA of the DNNS-doped polymeric membrane electrode at pH values of 9.0, 9.5, 10.0, 10.5 and 11.0. The sample medium was 20 mM carbonate buffer solution containing 120 mM NaCl. Unless otherwise stated, all experiments were performed with a rotating configuration (at 3000 rpm).

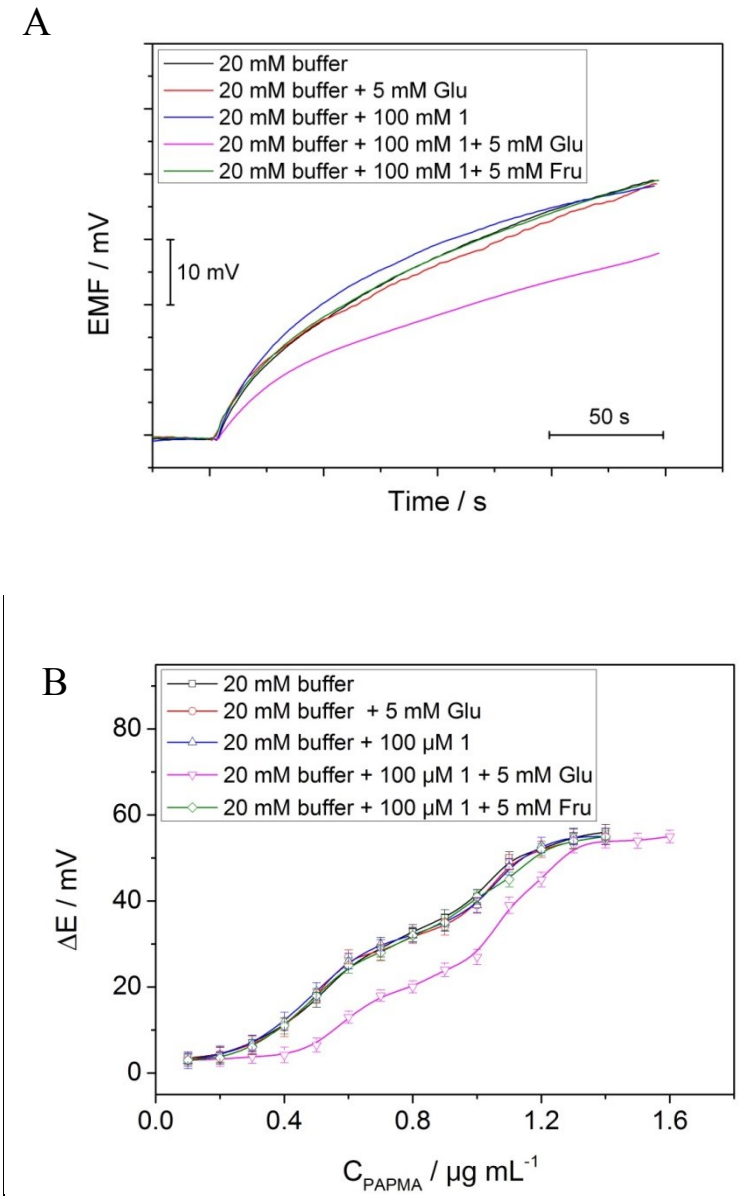

Fig. S2. (A) Potential responses to 1.0 μg/mL PAPMA of a DNNS-doped polymeric membrane electrode in the presence of different concentrations of the receptor 1, Glu and Fru. (B) Potentiometric titrations of the buffer alone, buffer + 5 mM Glu, buffer + 0.1 mM 1, buffer + 0.1 mM 1 + 5 mM Glu and buffer + 0.1 mM 1 + 5 mM Fru with 1.0 μg/mL PAPMA. The sample medium was 20 mM carbonate buffer solution (pH = 10.5) containing 120 mM NaCl, and the incubation time is 10 min. Each error bar represents one standard deviation of 3 replications.

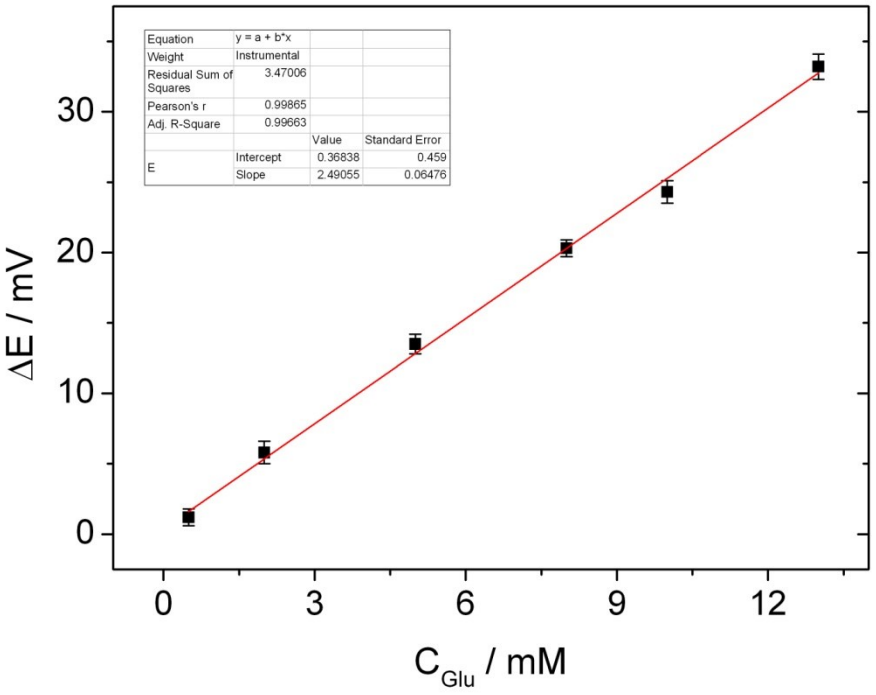

Fig. S3. Calibration curve for the potentiometric Glu detection. Each error bar represents one standard deviation of 3 replications.

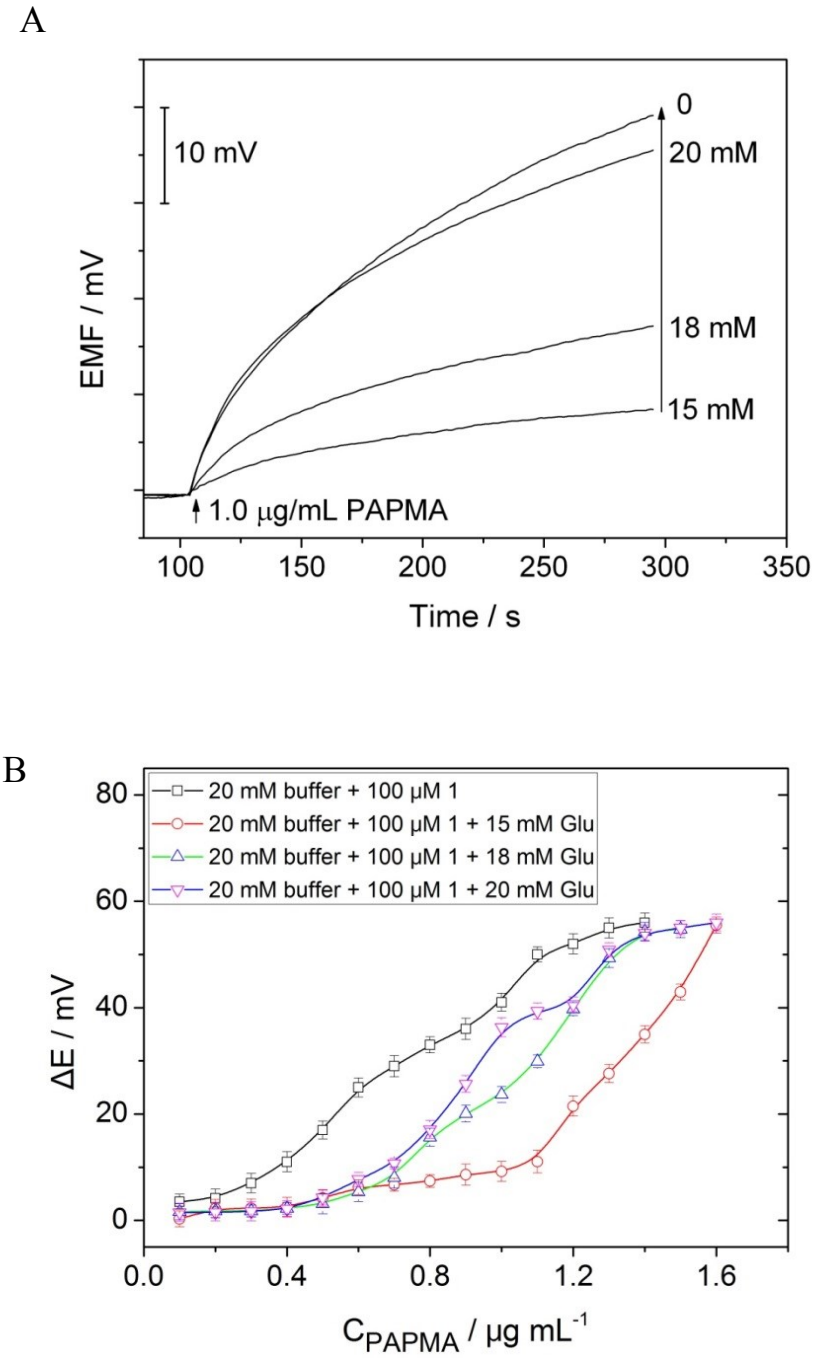

Fig. S4. (A) Potential responses to 1.0 μg/mL PAPMA of the membrane electrode in the presence of 0.1 mM diboronic acid (1) and Glu at different concentrations. (B) Potentiometric titrations of the buffer and Glu at different concentrations in the presence of 0.1 mM diboronic acid with 1.0 μg/mL PAPMA. The sample medium was 20 mM carbonate buffer solution (pH = 10.5) containing 120 mM NaCl, and the incubation time is 10 min. Each error bar represents one standard deviation of 3 replications.

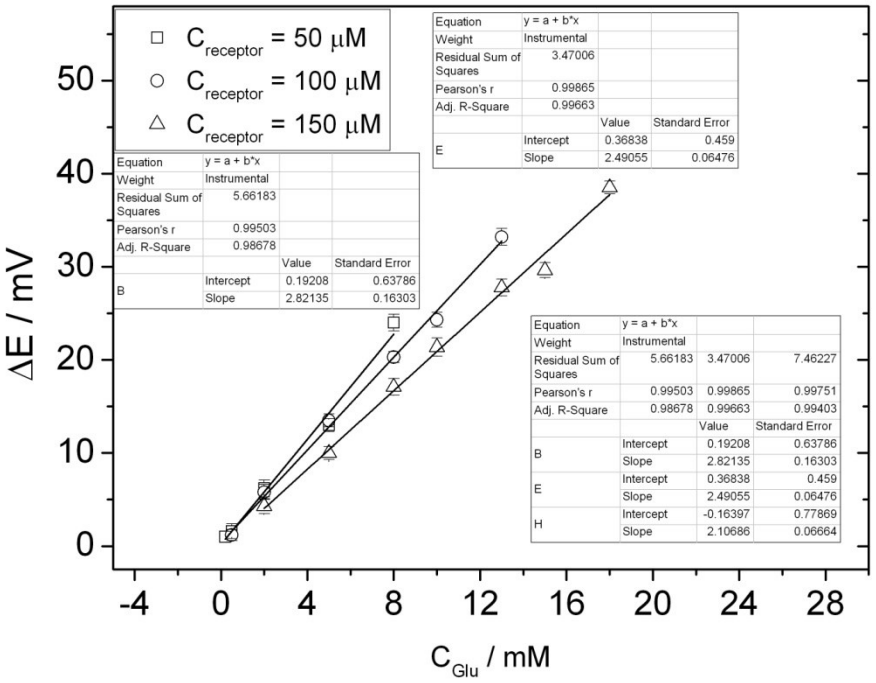

Fig. S5. Dynamically tunable linear response ranges of the proposed sensor with the receptor at different receptor's concentrations of 50, 100 and 150 μM. Each error bar represents one standard deviation of 3 replications.

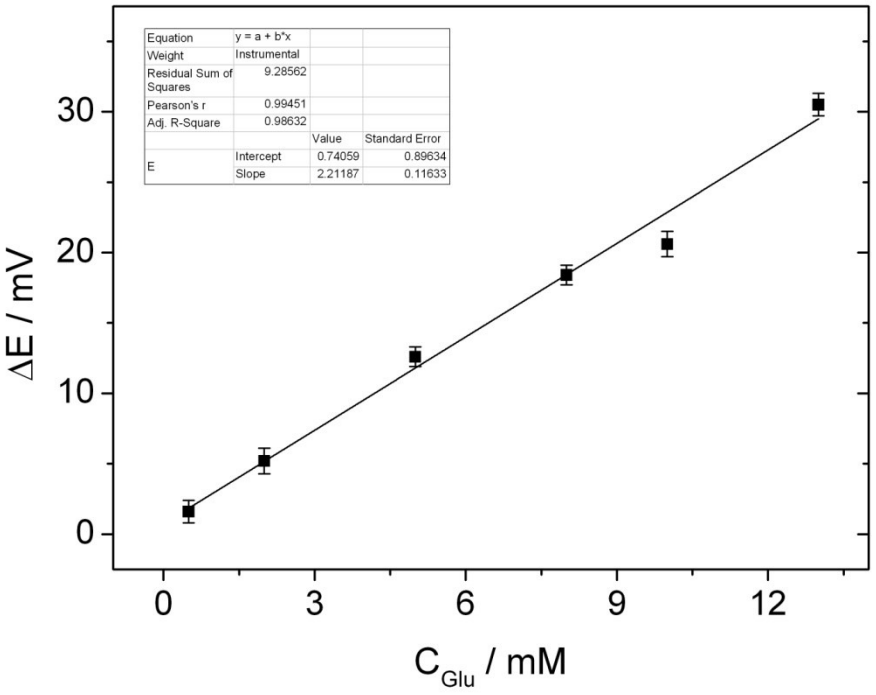

Fig. S6. The calibration curve for potentiometric sensing glucose in the presence of 0.1 mM Fru, 0.1 mM Gal, 0.1 mM Man and 1.5 mM lactate.

Table S1. Determination of Glu in human blood samples[a]

Sample	Present sensor (mM)	Glu meter (mM)
Sample 1	5.9±0.2	5.8±0.2
Sample 2	6.3±0.4	6.4±0.2
Sample 3	6.6±0.3	6.5±0.2
Sample 4	5.6±0.3	5.7±0.3
Sample 5	7.1±0.4	7.0±0.2
Sample 6	6.1±0.3	6.2±0.2
Sample 7	7.3±0.4	7.4±0.3
Sample 8	6.8±0.4	6.7±0.2
Sample 9	7.6±0.3	7.7±0.3
Sample 10	5.4±0.3	5.3±0.2

[a] Average value ± standard deviation (n=3).