

Supporting Information

Periodic Concentration-Polarization-Based Formation of a Biomolecule Preconcentrate for Enhanced Biosensing

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Supplementary figures

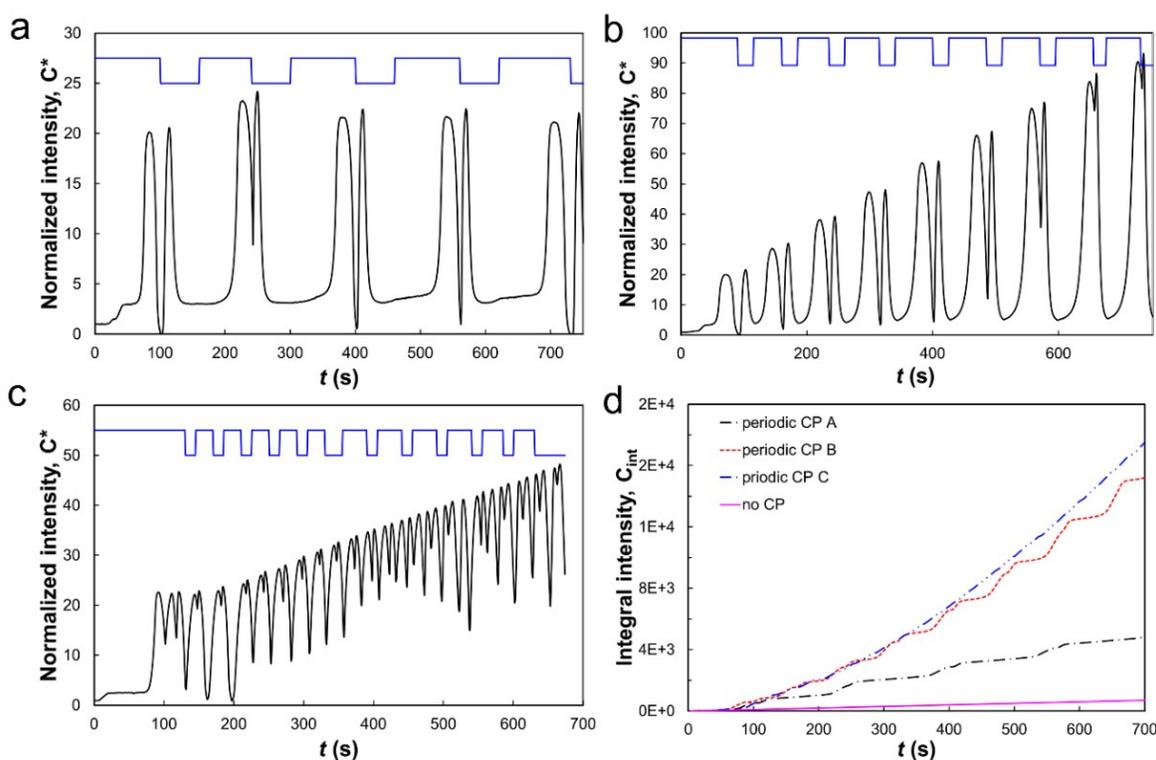


Fig. S1. Transient concentration of pre-concentrated green fluorescent protein-labeled molecules within the sensing region, as a function of the periodic CP regime. a-c) Normalized intensity of the fluorescence within the interrogation area as a function of time, for various frequencies of applied CP (30V). The periodic applied voltage (i.e., A, B, C) are indicated by the blue curves. d) Retention time of the fluorescent molecules over the target area.

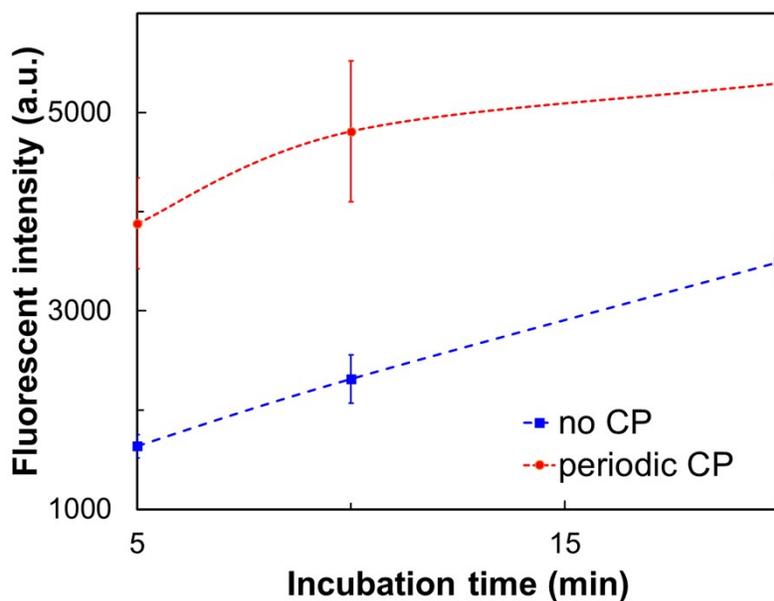


Fig. S2. Effect of incubation time on binding of fluorescently labeled anti-human IgG antibody ($1\mu\text{g ml}^{-1}$) to immobilized magnetic particle-conjugated human IgG, subjected to periodic CP. The applied incubation times were 5, 10 and 20 min. The applied periodic CP was 30 V and on and off time intervals were 35s and 10s, respectively, under forced flow (left to right direction, $(73 \pm 7 \mu\text{m s}^{-1}$, $\text{Pe} \sim 438$)).

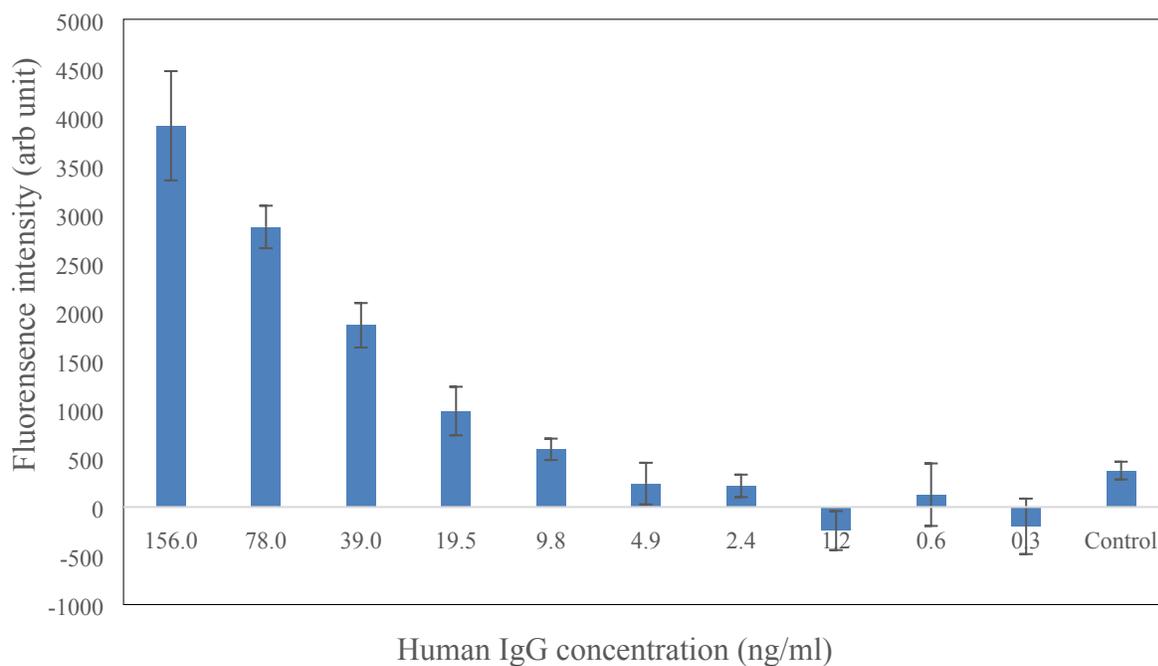


Fig. S3. Detection of human IgG using a conventional ELISA, in plate.

Supplementary movies

Movie S1: The effect of various periodic CP regimes on preconcentration at the target area upstream microchannel area under advection of u , corresponding to Fig. 2.

Movie S2: Time-evolution of sweeping the preconcentrated plug of fluorescently labeled anti-human IgG ($1 \mu\text{g ml}^{-1}$) by applying periodic CP at the target area decorated with immobilized MP-conjugated human-IgG, corresponding to Fig. 4.