

Supplementary File

Photoelectrochemical glucose biosensor based on dehydrogenase enzyme and NAD⁺/NADH redox couple using quantum dot modified pencil graphite electrode

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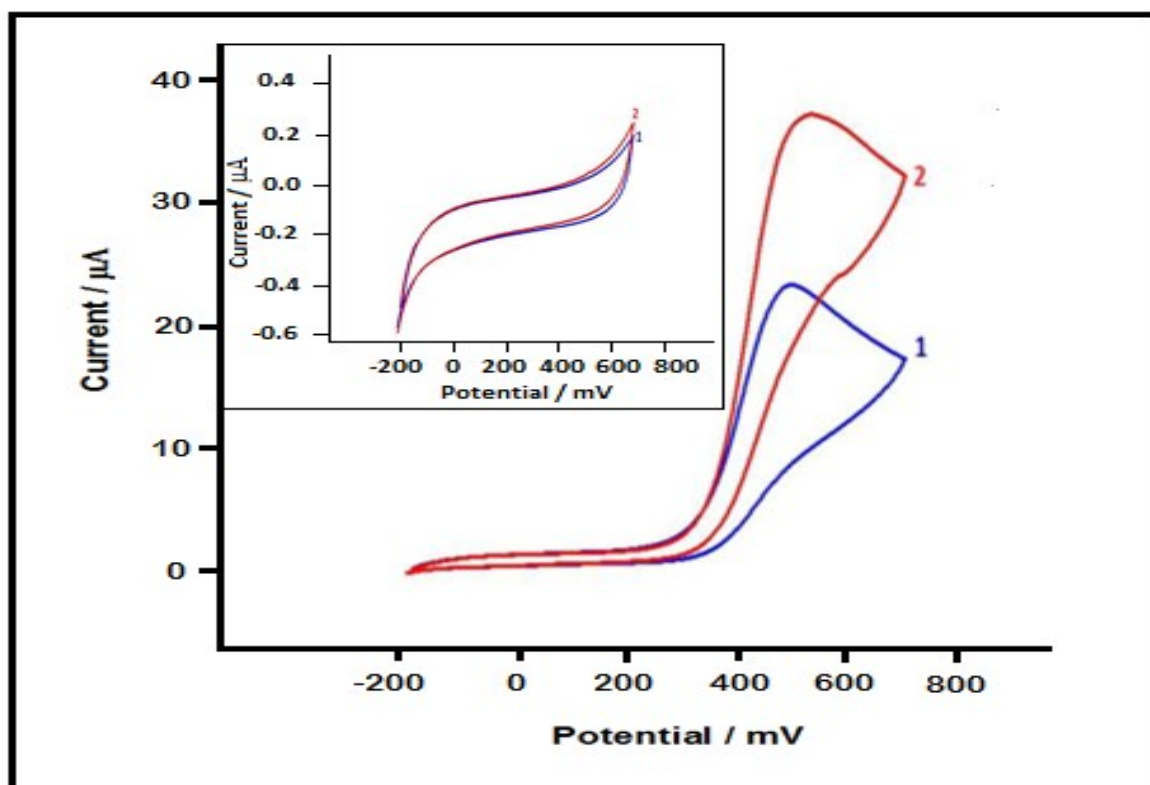


Fig. S1 Cyclic voltammograms of pretreated PGE in the presence of 2 mM NADH. 1) without light, 2) with light.(inset: in the absence of NADH) Supporting electrolyte: 0.1 M PBS (pH 7.0), 0.1 M KCl, scan rate: 20 mV.s⁻¹.

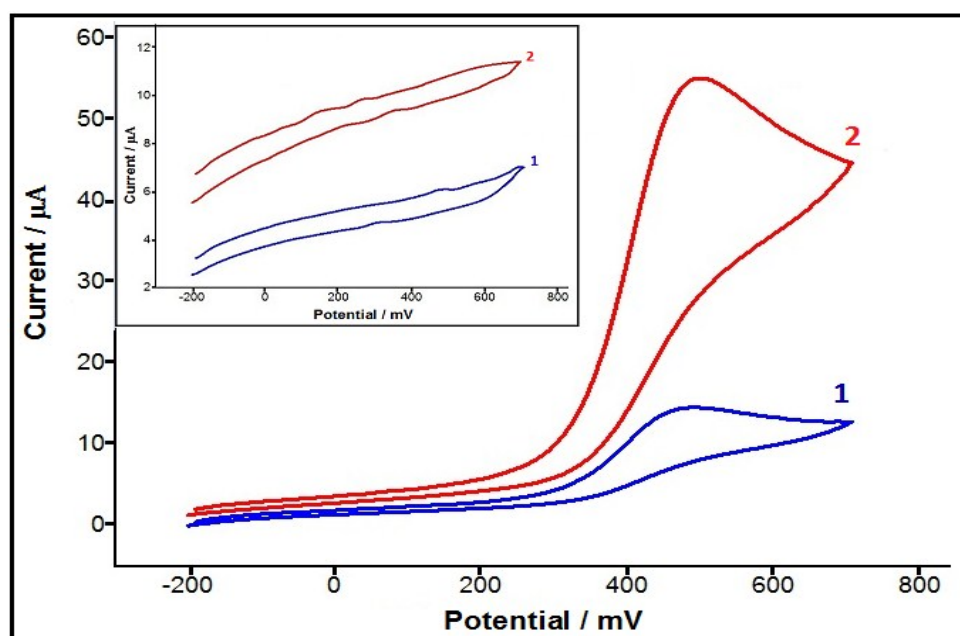


Fig. S2. Cyclic voltammograms of CdS-ZnS/PGE in the presence of 2 mM NADH. 1) without light, 2) with light.(inset: in the absence of NADH) Supporting electrolyte: 0.1 M PBS (pH 7.0), 0.1 M KCl, scan rate: 20 mV.s⁻¹.

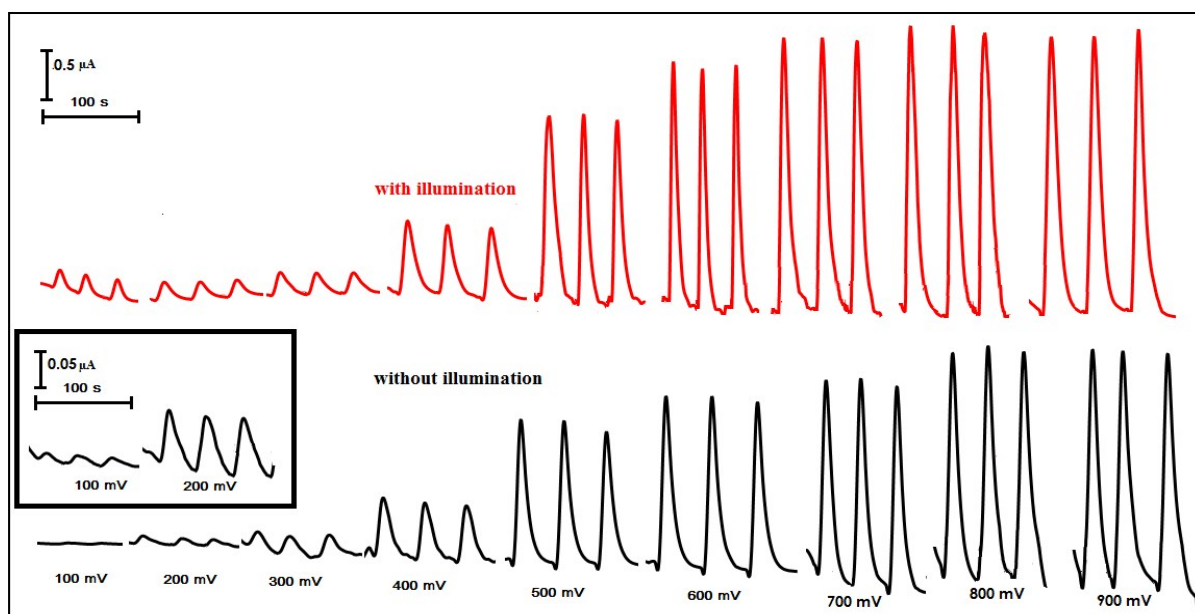


Fig.S3. Current-time curves of 0.10 mM NADH solutions in 0.10 M PBS containing 1.0 M KCl at various applied potential using CdS-ZnS/MAA/PGE. (Carrier stream: 0.10 M PBS pH 7.0 containing 1.0 M KCl, flow rate: 1.3 mL. min⁻¹).

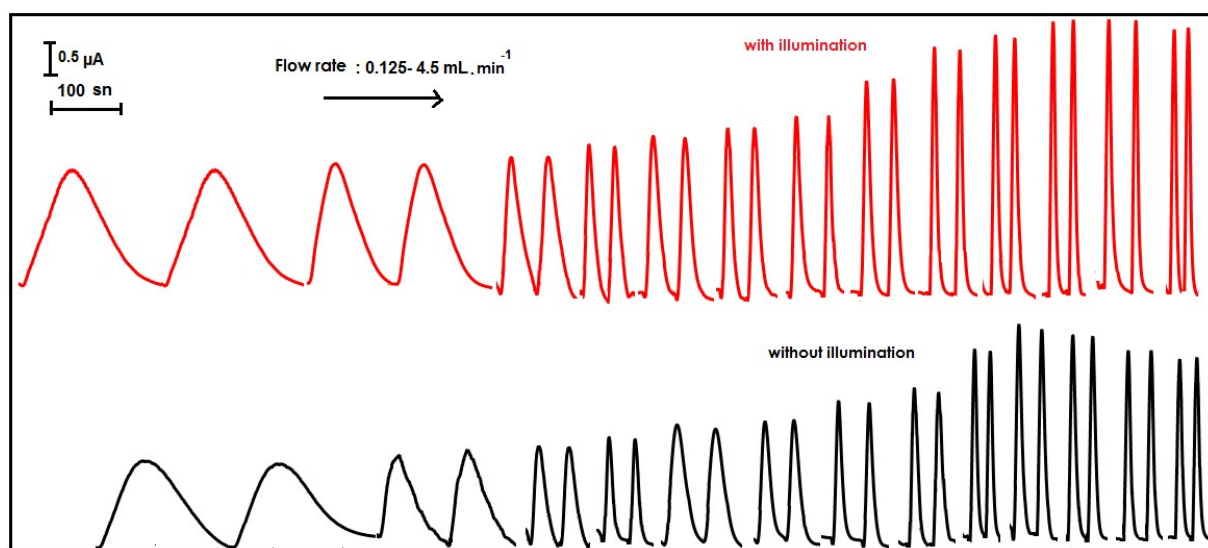


Fig. S4., Current-time curves of 0.1 mM NADH solutions in 0.10 M PBS containing 1.0 M KCl at various flow rate using CdS-ZnS/MAA/PGE. (Carrier stream: 0.10 M PBS pH 7.0 containing 1.0 M KCl, applied potential: 600 mV).

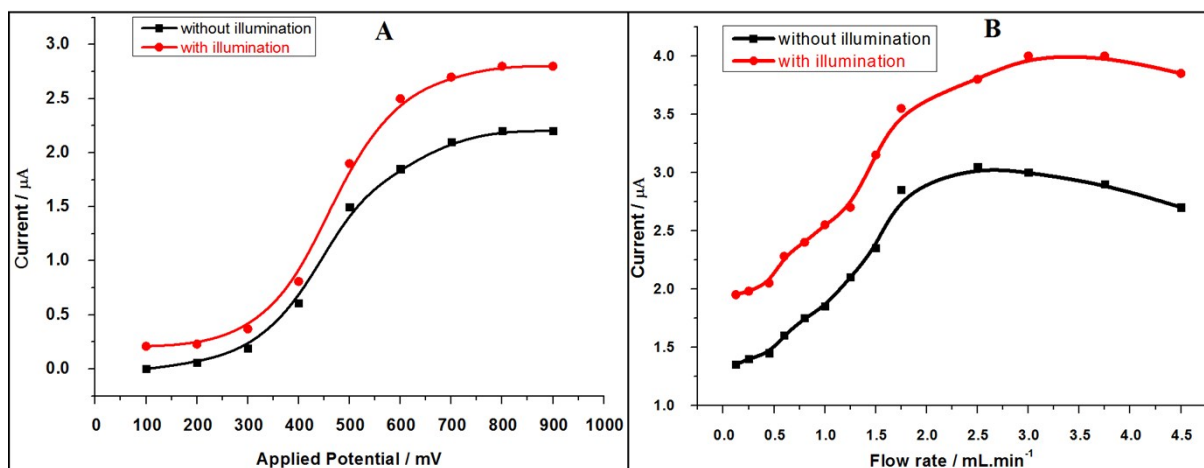


Fig. S5. The effect of applied potential (A) and flow rate (B) on amperometric (a) and photoamperometric (b) peak currents of 0.10 mM NADH with CdS-ZnS/MAA/PGE

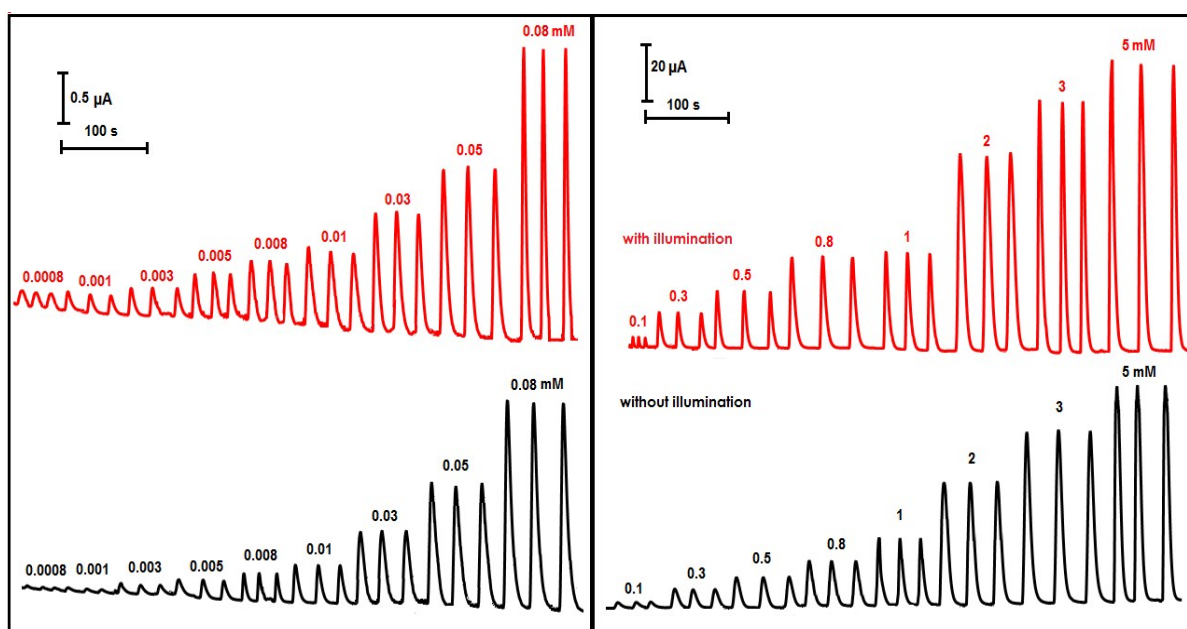


Fig S6. Current- time fiagrams of NADH with different concentrations using CdS-ZnS/MAA/PGE in FIA system for amperometric and photoamperometric methods. (Carrier stream: 0.10 M PBS (pH 7.0) containing 1.0 M KCl, Applied potential: +0.6 V; Flow rate: $1.75 \text{ mL}\cdot\text{min}^{-1}$, sample loop: $100 \mu\text{L}$; transmission tubing length: 10 cm).

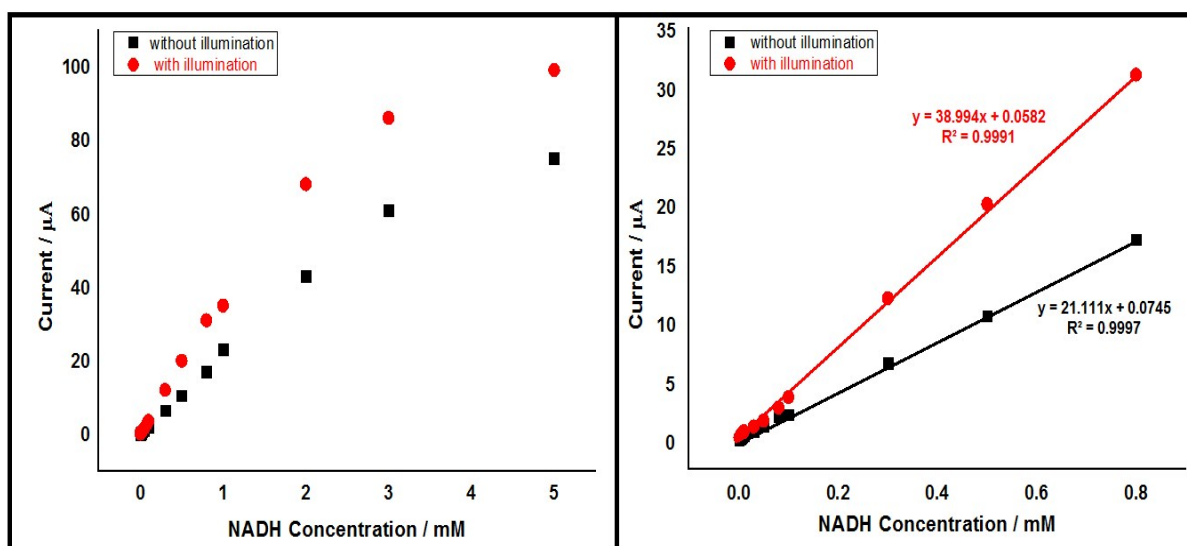


Fig S7. The catalytic curve of CdS-ZnS/MAA/PGE vs. different concentrations of injected NADH in FIA system for amperometric (a) and photoamperometric (b) methods.

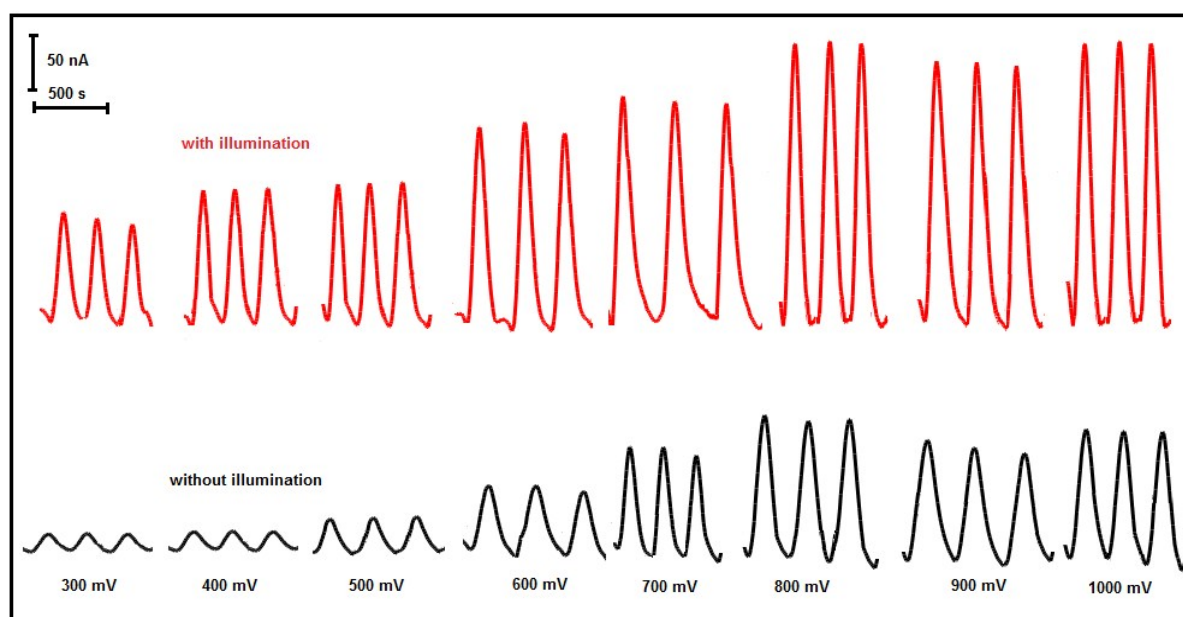


Fig. S8. Current-time curves of 0.5 mM glucose solutions in 0.10 M PBS containing 1.0 M KCl and 10 mM NAD^+ at various applied potential using GDH/CdS-ZnS/MAA/PGE. (Carrier stream: 0.10 M PBS pH 7.0 containing 1.0 M KCl, 10 mM NAD^+ , flow rate: $1.3 \text{ mL} \cdot \text{min}^{-1}$).

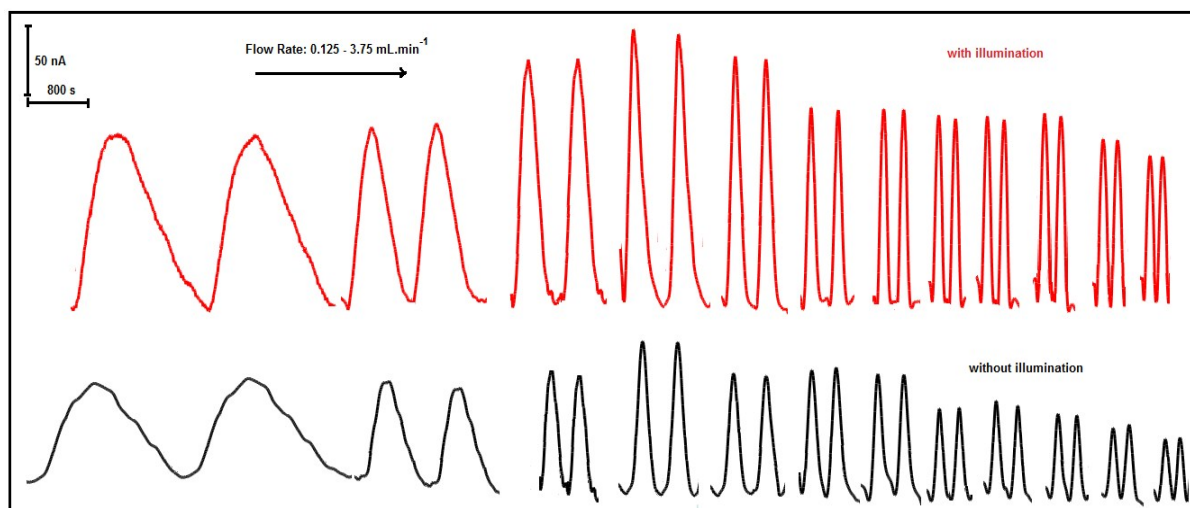


Fig S9. Current-time curves of 0.5 mM glucose solutions in 0.10 M PBS containing 1.0 M KCl and 10.0 mM NAD^+ at various flow rate using GDH/CdS-ZnS/MAA/PGE. (Carrier stream: 0.10 M PBS pH 7.0 containing 1.0 M KCl, 10 mM NAD^+ , applied potential: 800 mV).

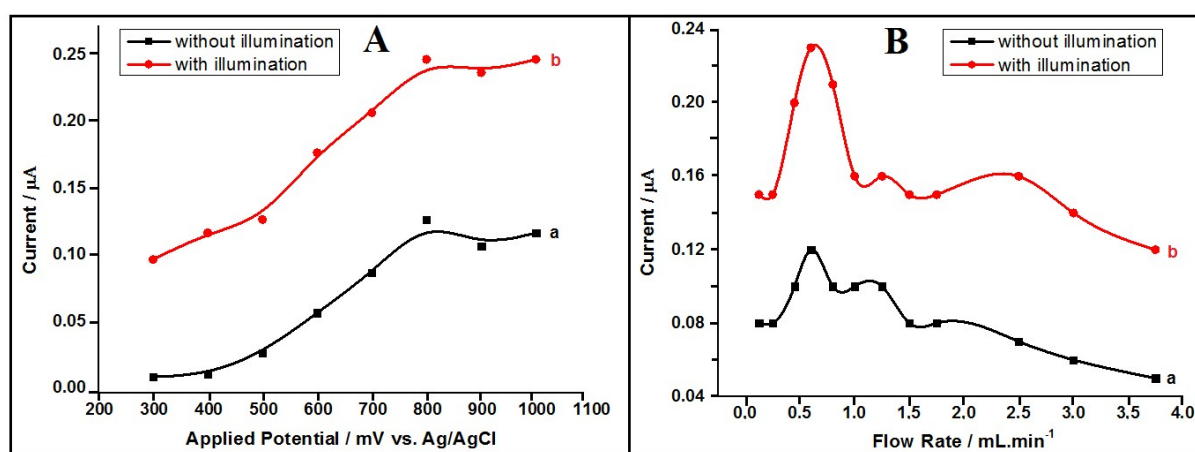


Fig S10. The effect of applied potential (**A**) and flow rate (**B**) on amperometric (a) and photoamperometric (b) peak currents of 0.5 mM glucose with GDH/CdS-ZnS/MAA/PGE ,