

Supporting Information

Nickel-Gold Bimetallic Monolayer Colloidal Crystal via Galvanic Replacement as a Highly Sensitive Electrochemical Sensor

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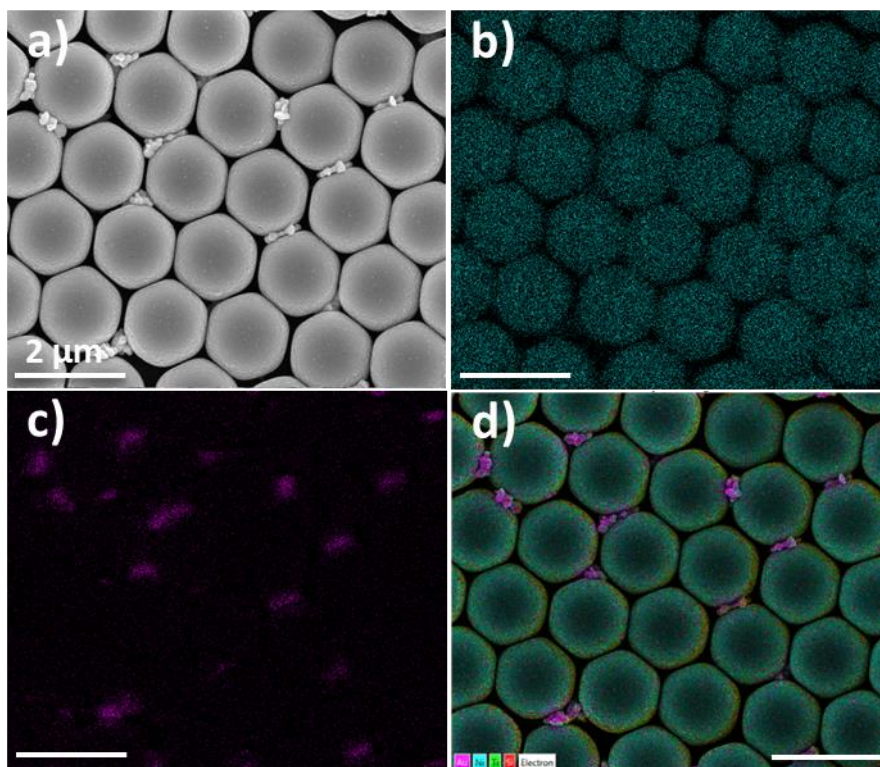


Fig. S1 SEM images of (a) Ni-Au_{1mM} monolayer and corresponding elemental map using EDS for (b) Ni (c) Au and (d) overlay of EDS maps.

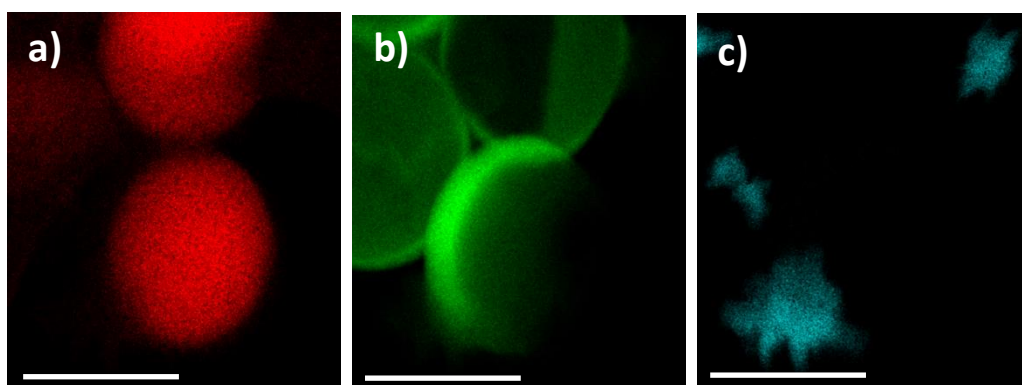


Fig. S2 TEM images of a singular PS Ni-Au monosphere with EDS elemental mapping of a) C (b) Ni and (c) Au

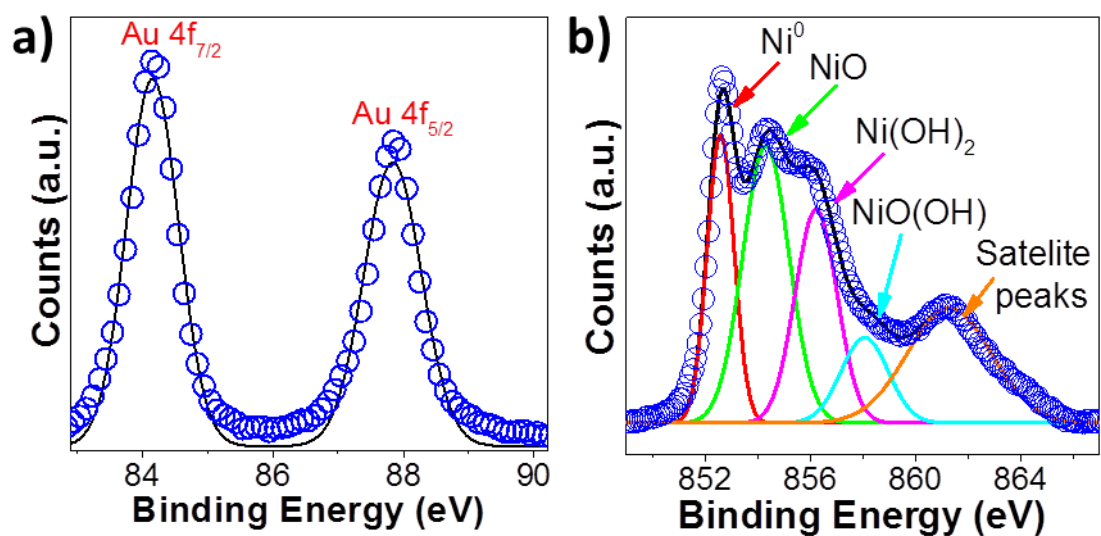


Fig. S3 XPS analysis for Ni-Au_{1mM} bimetallic systems (a) Au 4f core level and (b) Ni 2P core level spectra.

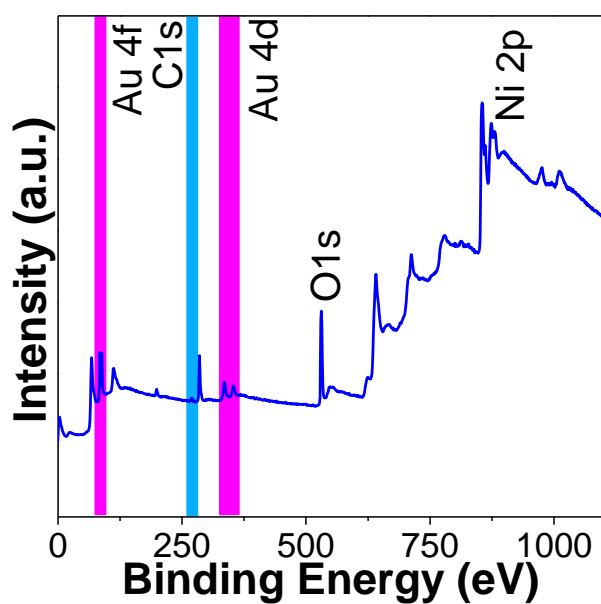


Fig. S4 XPS Survey of Ni-Au₁

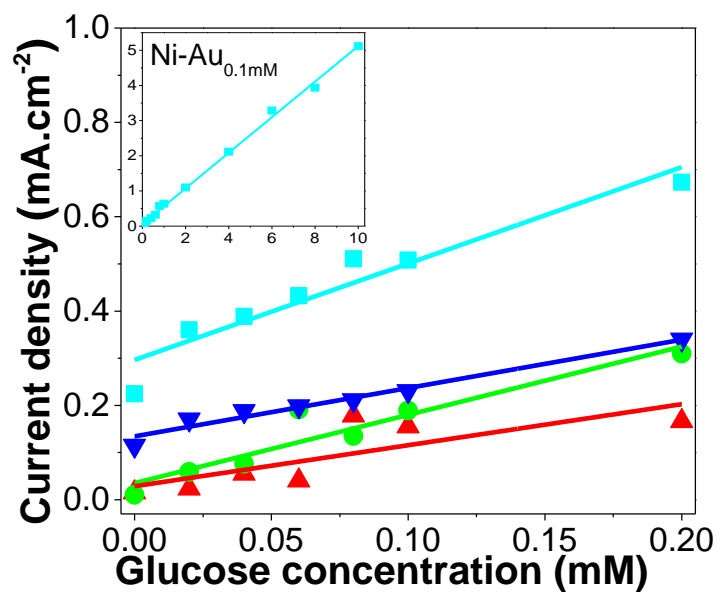


Fig. S5 Chronoamperometric analysis of Ni-Au_{0.1mM} (aqua), flat Ni (green), Ni balls (blue) and flat Au (red) in a solution of 0.5 M KOH and increasing concentrations of glucose ranging between 20 μ M and 0.2 mM. (Inset image) Linear progression of Ni-Au_{0.1mM} over the glucose concentration range of 20 μ M - 10 mM.

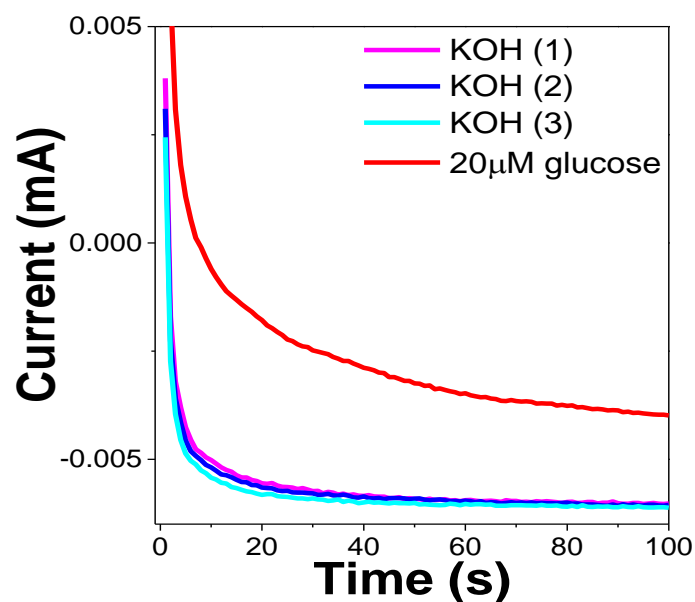


Fig. S6 Experimental chronoamperometric responses in a solution of 0.5 M KOH for a run time of 100s with 2 repeat runs followed by a single run with the addition of 20 μ M glucose

Time (s)	Sensitivity ($\mu\text{A}\cdot\text{mM}^{-1}\cdot\text{cm}^{-2}$)	R^2 (value)	LOD (calculated)
1	923	0.94	14.5
5	506	0.997	14.9
10	389	0.998	14.9
50	217	0.999	15
100	179	0.998	15.1

Table S1 Comparison table of glucose additions analysis and their calibration curves at difference times for sensitivity, R^2 value and limit of detection (LOD).

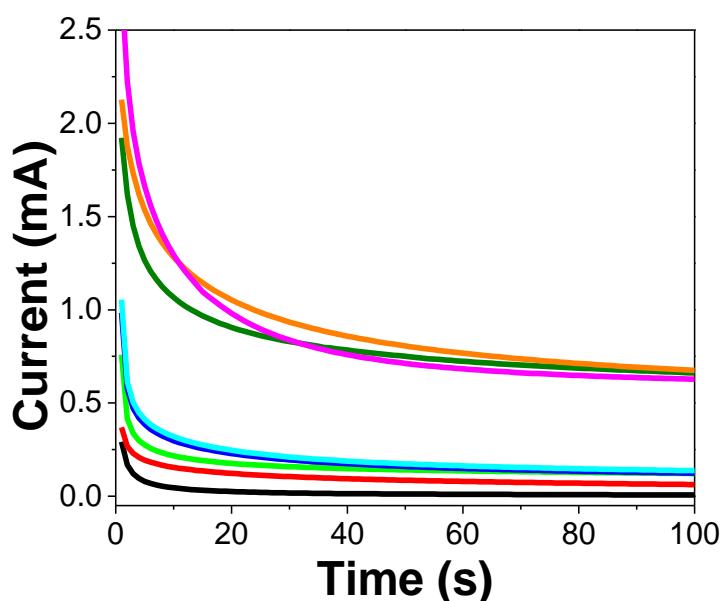


Fig. S7 Experimental chronoamperometric responses of physiological contaminants analysis in a solution of 0.5 M KOH followed by the addition of sucrose (red), fructose (green), AA (blue), UA (aqua), 10 mM glucose (magenta), 10mM glucose + AA (dark green) and 10mM glucose + UA (orange).