

**Analytical and Bioanalytical Chemistry**

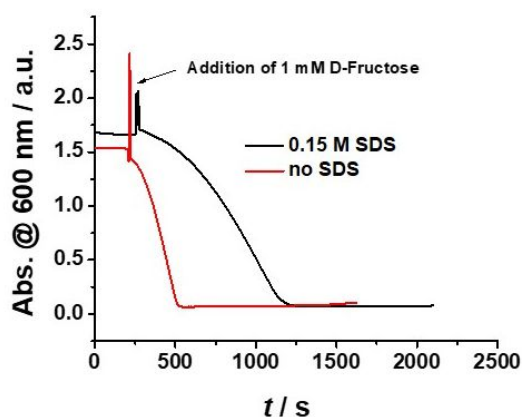
**Electronic Supplementary Material**

**The influence of the shape of Au nanoparticles on the catalytic current of fructose dehydrogenase**

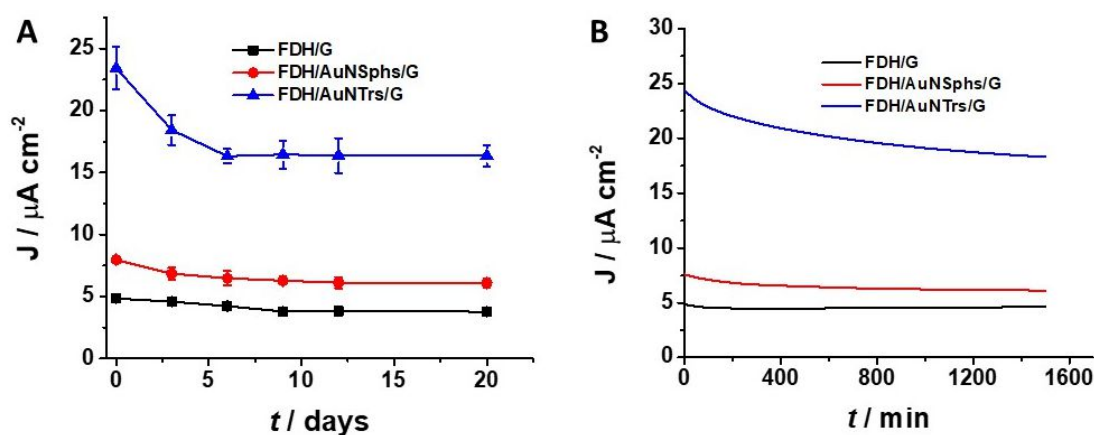
Paolo Bollella, Yuya Hibino, Paolo Conejo-Valverde, Jackeline Soto-Cruz, Julián Bergueiro, Marcelo Calderón, Oscar Rojas-Carrillo, Kenji Kano, Lo Gorton

### Spectrophotometric kinetic assay procedure

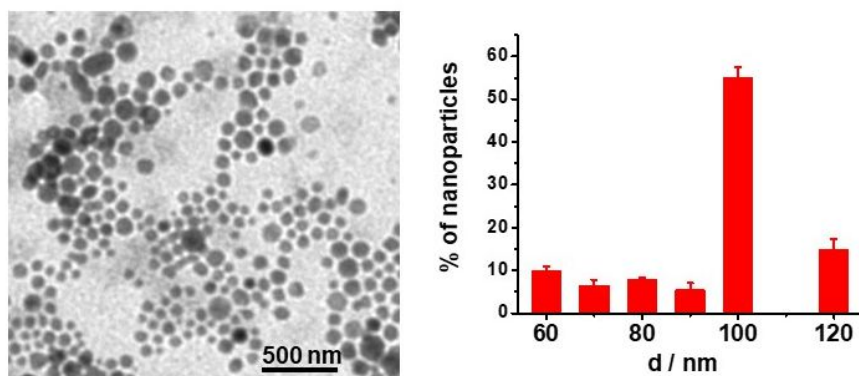
the activity of the DHFDH domain was monitored measuring the time-dependent variation of the absorbance at  $\lambda = 520 \text{ nm}$  ( $\epsilon = 6.9 \text{ mM}^{-1} \text{ cm}^{-1}$ ) of a mixture containing  $100 \mu\text{L}$  of  $10 \text{ mM}$  D-(-)-fructose,  $780 \mu\text{L}$  of  $50 \text{ mM}$  NaAc buffer,  $20 \mu\text{L}$  of enzyme solution, and  $100 \mu\text{L}$  of  $3 \text{ mM}$  DCIP as two- electrons/two protons acceptor [1].



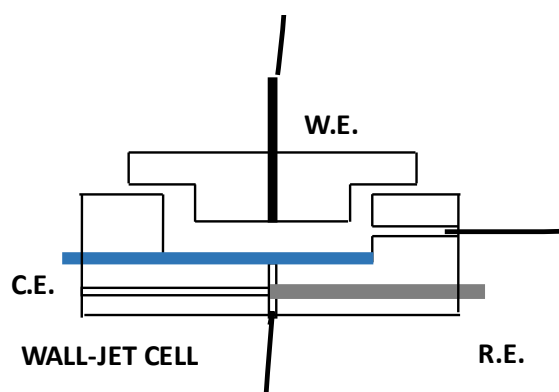
**Fig. S1** Spectrophotometric kinetic measurements of FDH enzymatic activity using 2,6-dichloroindophenol (DCIP,  $0.06 \text{ mM}$ ) as electron acceptor performed in  $50 \text{ mM}$  NaAc buffer at pH 4.5 (adding  $1 \text{ mM}$  D-(-)-fructose as substrate) in the absence of SDS (red line) and in the presence of  $0.15 \text{ M}$  SDS (black line)



**Fig. S2 (A)** Storage stability measurements performed in  $50 \text{ mM}$  NaAc buffer at pH 4.5 in the presence of  $1 \text{ mM}$  D-(-)-fructose for (black line) FDH/G, (red line) FDH/AuNSphs/G and (blue line) FDH/AuNTrs/G . The measurements were carried out by applying  $E = +0.4 \text{ V}$  vs.  $\text{Ag}|\text{AgCl}_{\text{sat}}$  at a flowrate of  $0.5 \text{ mL min}^{-1}$ . (A) Operational stability measurements performed in  $50 \text{ mM}$  NaAc buffer at pH 4.5 in the presence of  $1 \text{ mM}$  D-(-)-fructose for (black line) FDH/G, (red line) FDH/AuNSphs/G and (blue line) FDH/AuNTrs/G. The measurements were carried out by applying  $E = +0.4 \text{ V}$  vs.  $\text{Ag}|\text{AgCl}_{\text{sat}}$  at a flow rate of  $0.5 \text{ mL min}^{-1}$



**Fig. S3** TEM picture and size distribution of AuNSphs



**Fig. S4** Scheme of the wall-jet cell used for kinetic measurements

### References

- [1] Schulz C, Ludwig R, Micheelsen PO, Silow M, Toscano MD, Gorton L. Enhancement of enzymatic activity and catalytic current of cellobiose dehydrogenase by calcium ions. *Electrochem Commun.* 2012;17(Suppl. C):71–4.