Supporting information

Exploiting Metal Organic Frameworks as efficient enzymes immobilization matrices for the building-up of sensitive electrochemical biosensor

Snehangshu. Patra,[abc] Tania Hidalgo Crespo,[c] Anastasia Permyakova,[c] Clémence Sicard,[c] Christian Serre,[c] Annie Chaussé,[ab] Nathalie Steunou*[c] and Ludovic Legrand*[ab]

[a] CNRS UMR 8587 Bd François Mitterrand 91025 Evry, France

[b] Université d'Evry, Laboratoire Analyse et Modélisation pour la Biologie et l'Environnement (LAMBE), Université Evry, Bd François Mitterrand 91025, Evry, France.

[c] Institut Lavoisier de Versailles, UMR CNRS 8180, UVSQ, 45 avenue des Etats-Unis 78035 Versailles Cedex. France.

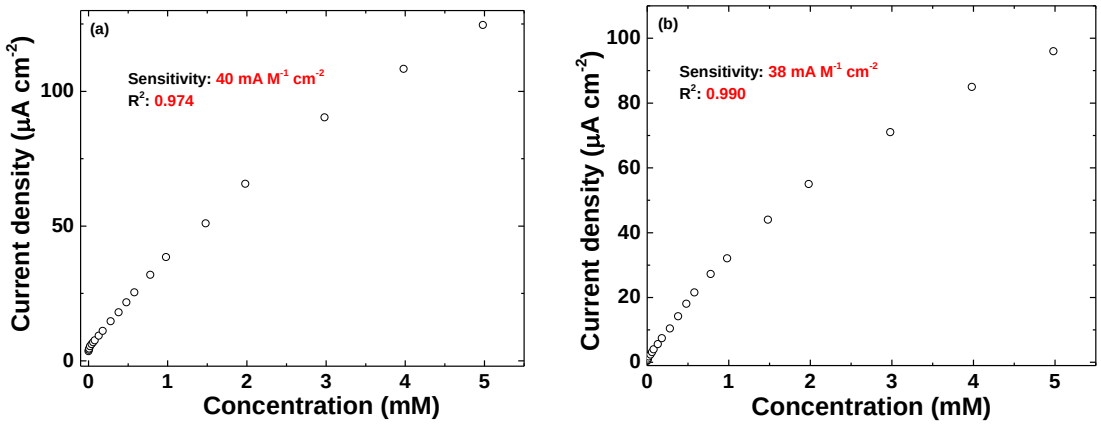


Figure SI 1. Current density versus glucose concentration of GOx-MIL-100(Fe)- PtNPs-CIE at pH=4 when the electrode was dried at (a) room temperature and (b) 50°C. Note that the sensitivity was obtained here without optimization.

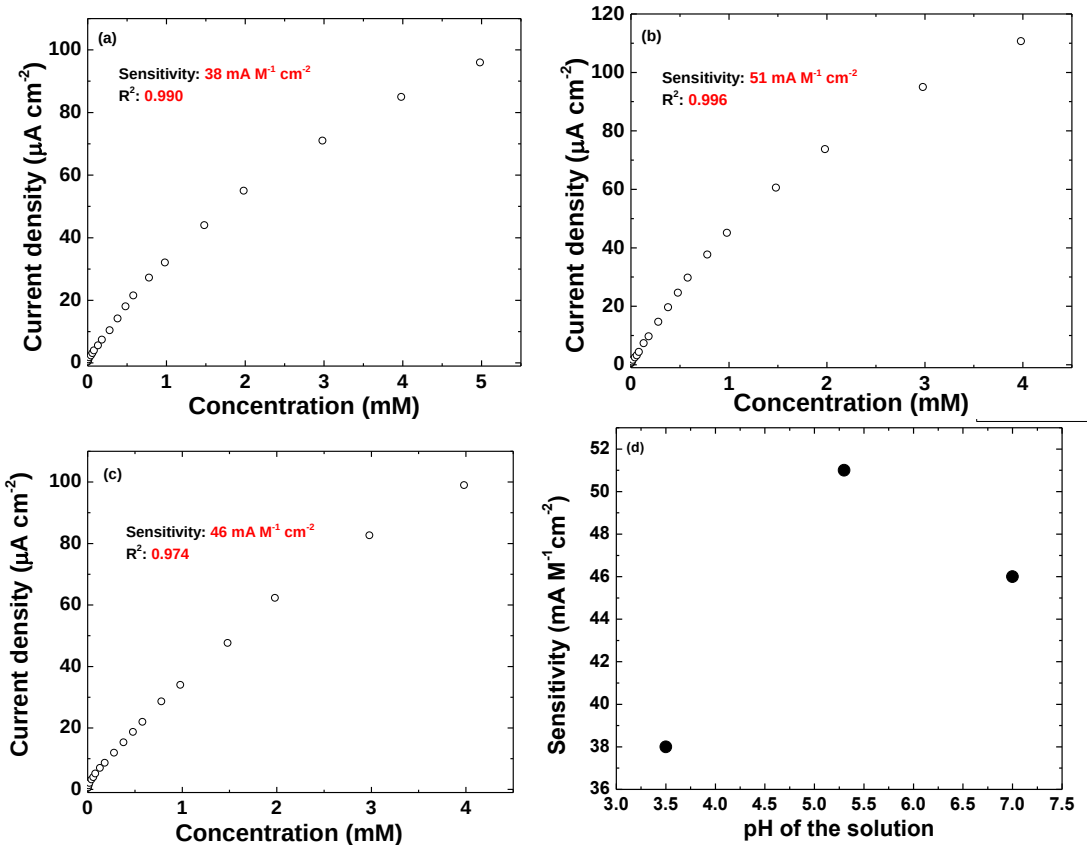


Figure SI 2. Current density versus glucose concentration for GOx-MIL-100(Fe)-PtNPs-CIE. For each electrode, GOx is solubilized at pH (a) 3.5, (b) 5.3 and (c) 7. Curve (d) shows the sensitivity versus pH of the solution in which GOx was dissolved. Note that the sensitivity was obtained here without optimization.

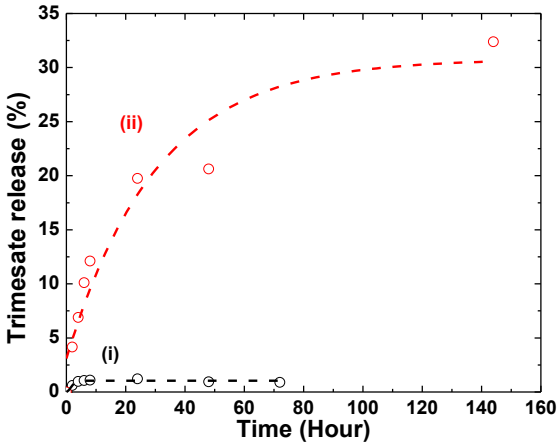


Figure SI 3. Release of trimesate measured by HPLC during MIL-100(Fe) incubation in acetate buffer of pH=5.3 when (i) immobilized at the electrode surface and kept at 0.5 V vs. Ag^{+}/Ag and (ii) incubated in the form of powder.

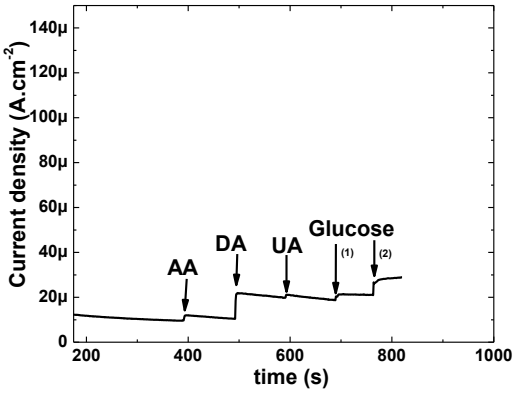


Figure SI 4. Amperometric current responses at a potential of 0.5 V vs. AgCl/Ag upon the addition of 0.1 mM ascorbic acid (AA), 0.1 mM dopamine (DA), 0.1 mM uric acid (UA), 0.04 mM (addition (1))and 0.08 mM (addition (2)) glucose .

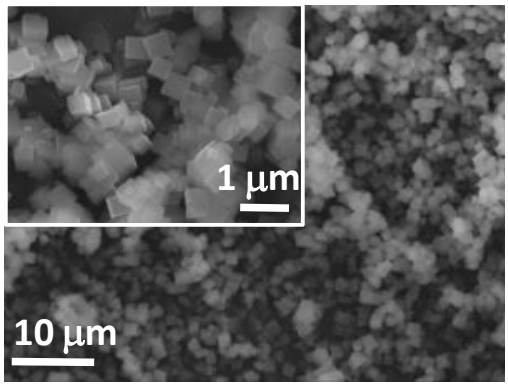
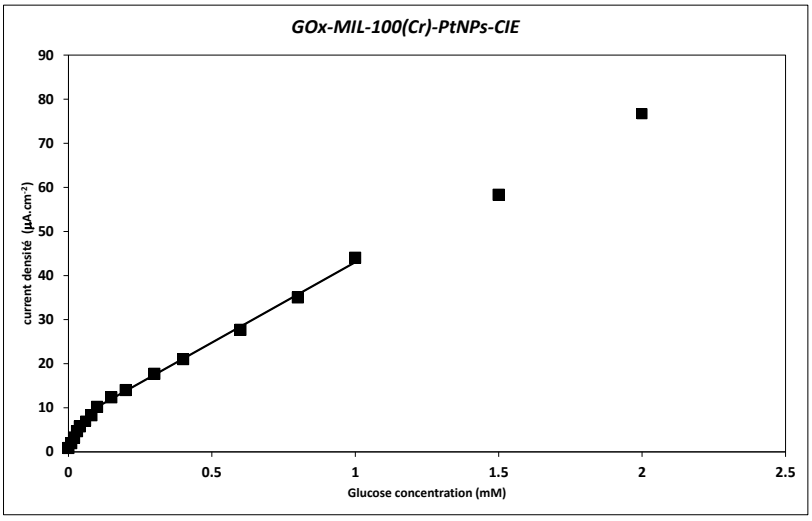
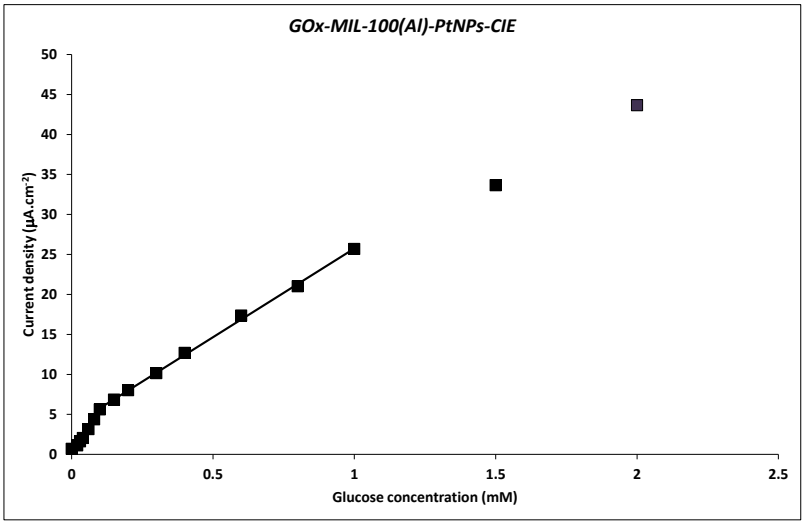


Figure SI5. SEM images of MIL-127(Fe)nanoparticles.





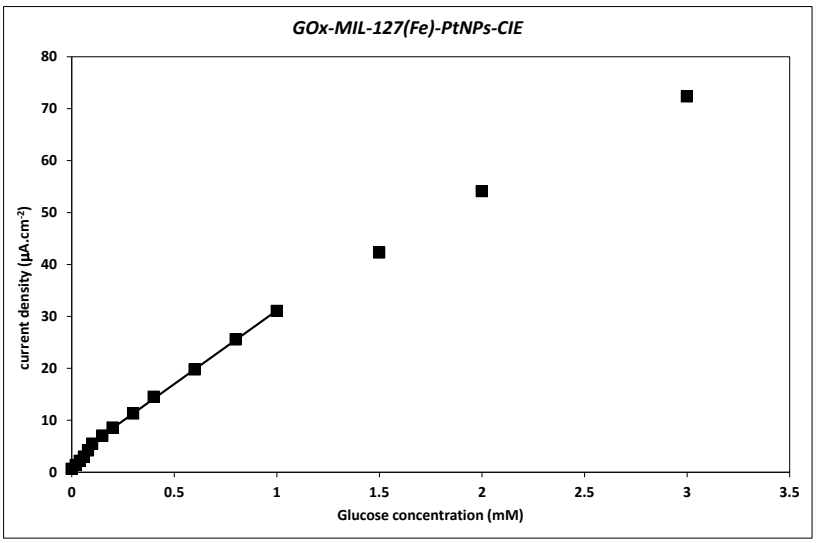


Figure SI6. Glucose calibration curves of current vs glucose concentration of GOx-MOF-PtNp-CIE electrode

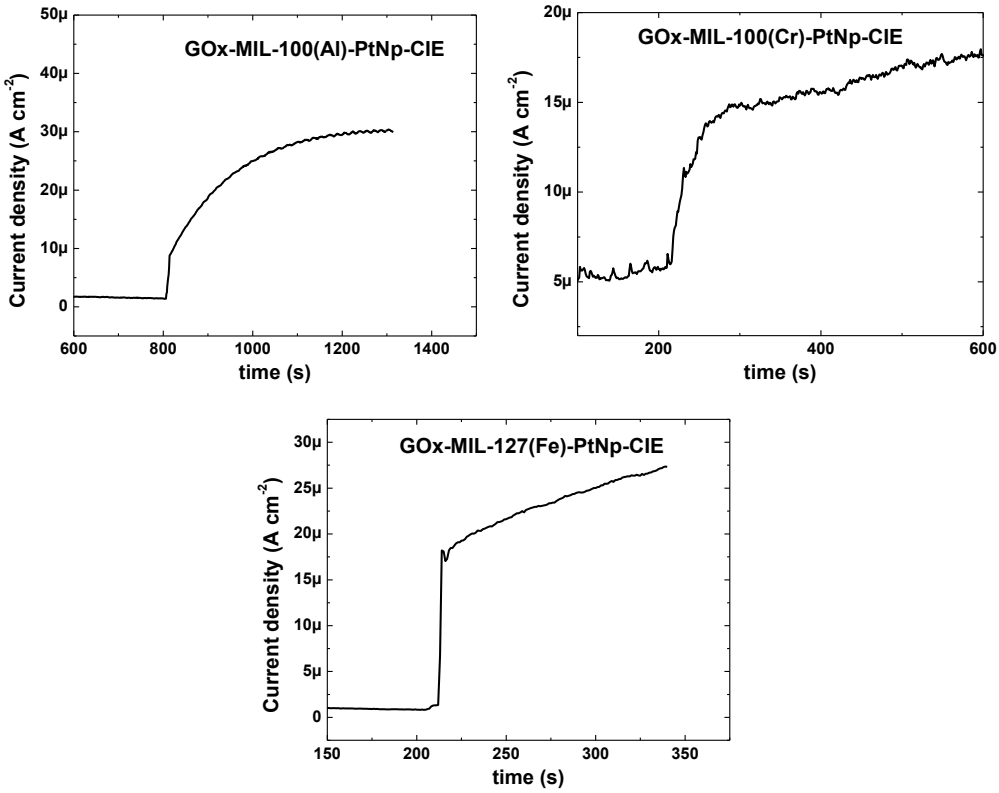


Figure SI7. Chronoamperometric responses of GOx-MIL-100(Al)-PtNp-CIE, GOx-MIL-100(Cr)-PtNp-CIE and GOx-MIL-127(Fe)-PtNp-CIE after adding respectively 1, 0.3 and 0.7mM of glucose. Response times were measured by the time taken to achieve 90% of the current density.