

SUPPORTING INFORMATION:

The aqueous solution was prepared using purified water with a resistivity of 18 MΩ cm, obtained from a double purification system consisting of an Elga PureLab Ultra unit and a Millipore “Rios 3” reverse osmosis system. The aqueous solutes were the gold source, sodium tetrachloroaurate (3×10^{-3} M, Alfa Aesar, 99.99 %), with LiCl (0.1 M, Sigma Aldrich, 99+ %) and LiClO₄ (0.1 M, Sigma Aldrich, 95+ %) added as supporting electrolytes. The perchlorate also functioned as a distributing “common-ion”, by defining the Galvani potential for metal deposition at the gel/organic interface [S1]. A neutral polysaccharide, agar gel (3 %, Sigma Aldrich) was added to the aqueous solution and heated in a water bath (approximately 80° C for 10 minutes) until the gelling agent had dissolved fully and bubbles could no longer be observed. The hot mixture was then poured into a glass cell and allowed to set. The organic phase consisted of bis(pentamethylcyclopentadienyl) iron (decamethylferrocene, DmFc, 9×10^{-3} M, Sigma Aldrich, 97 %) and tetrabutyl ammonium perchlorate (TBAP, 0.1 M, Fluka Chemika, >99 %) in analytical grade 1,2-dichloroethane (1,2-DCE, Sigma Aldrich, Spectrophotometric grade, >99 %). Once the gel had set, the organic phase was poured on to the aqueous gel, such that a 1:1 phase volume ratio resulted.

Reference:

S1: R.A.W. Dryfe, A.O. Simm and B. Kralj, *Journal of the American Chemical Society*, 2003, 125, 13014.