

Tuning the Photoelectrocatalytic Hydrogen Evolution of Pt-decorated Silicon Photocathodes by the Temperature and Time Electroless Pt Deposition

Bruno Fabre^{a,*}, Gaozeng Li^a, Francis Gouttefangeas^b, Loic Joanny^b and Gabriel Loget^{a,*}

^a*Institut des Sciences Chimiques de Rennes (ISCR), UMR 6226 CNRS/Université de Rennes 1, Matière Condensée et Systèmes Electroactifs (MaCSE), Campus de Beaulieu, 35042 Rennes Cedex, France*

^b*ScanMAT – CMEBA, Université de Rennes 1, Campus de Beaulieu, 35042 Rennes Cedex, France*

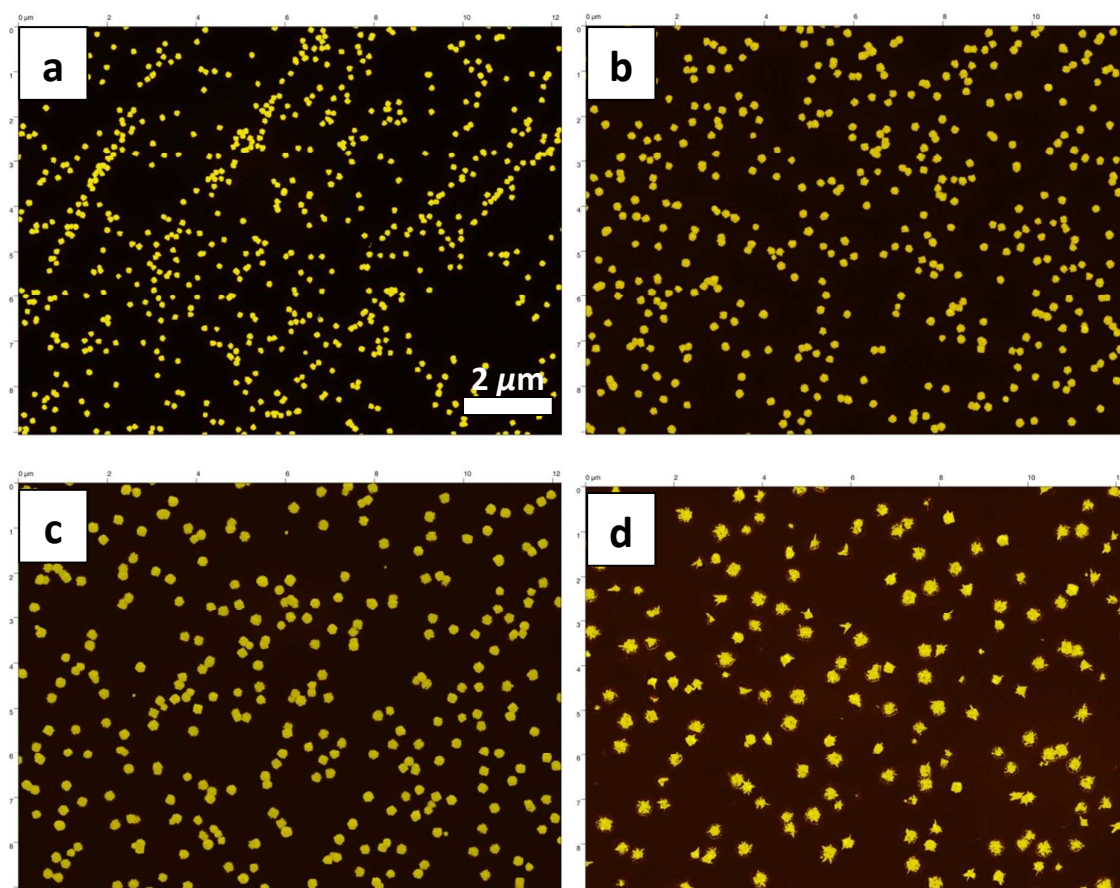


Figure S1. SEM images processed by the ImageJ software to determine the number density of Pt particles deposited on H-Si(100) surfaces. The surfaces were prepared by electroless deposition of Pt at 22 (a), 45 (b), 60 (c) and 75°C (d) for 5 min.

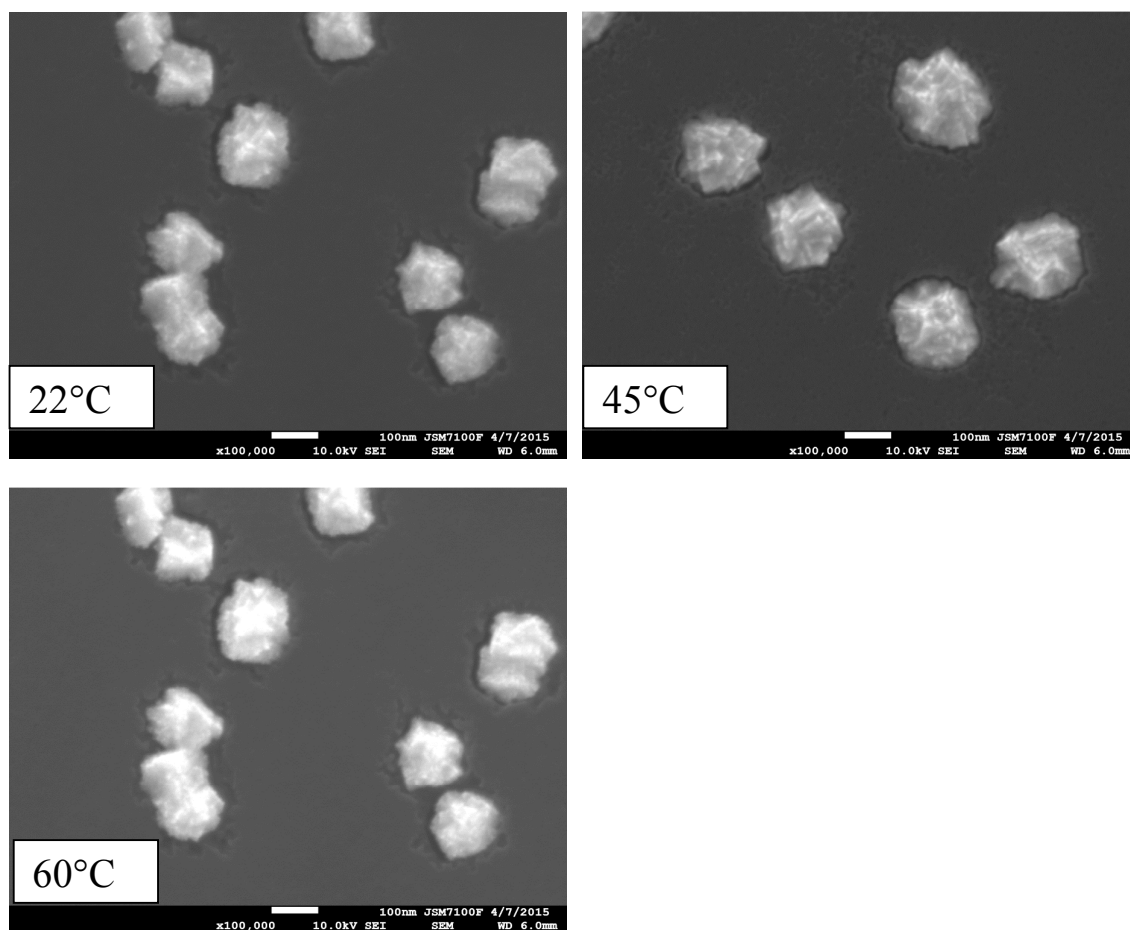


Figure S2. High-magnification SEM images of flat H-Si(100) surfaces after electroless deposition of Pt at 22, 45 and 60°C for 5 min. Deposition solution: Na_2PtCl_4 at 1 mM in HF 4.6 M. These images show the Pt NCs growing in the trenches of silicon bulk.

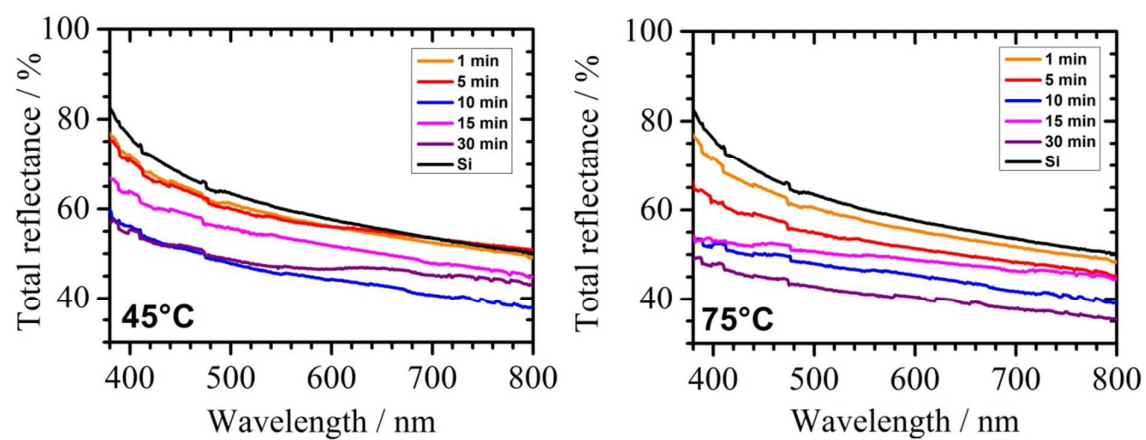


Figure S3. Total reflectance spectra of Pt-coated photoelectrodes prepared at 45 and 75°C for different times (colour lines) and H-Si (black line).