ESI for *PCCP* article b806938g

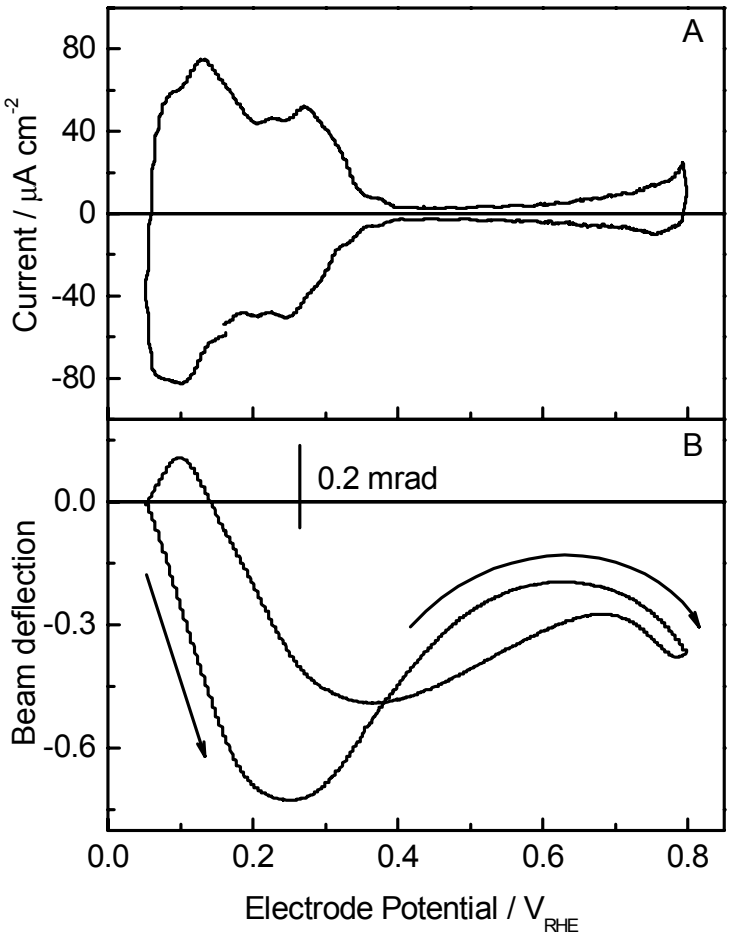


Figure S1 ESI . CV (A) and CVD (B) of MP-Pt in 1 M $HClO_4$. v = 0.10 Vs^{-1}.

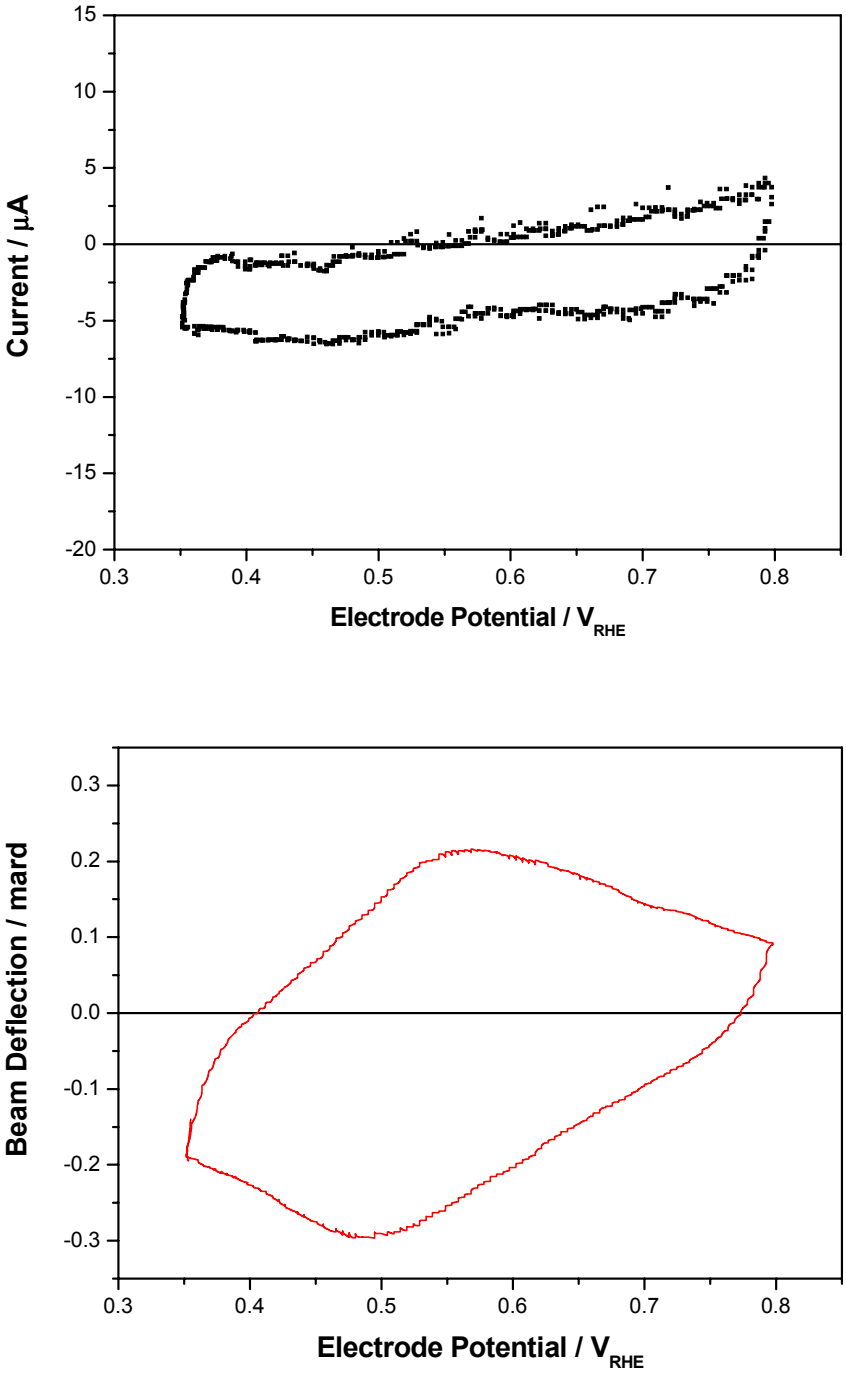


Figure S2 ESI. CV (upper) and CVD (lower) of a MP-Pt electrode in 1 M H_2SO_4. $v = 0.015$ Vs^{-1}.

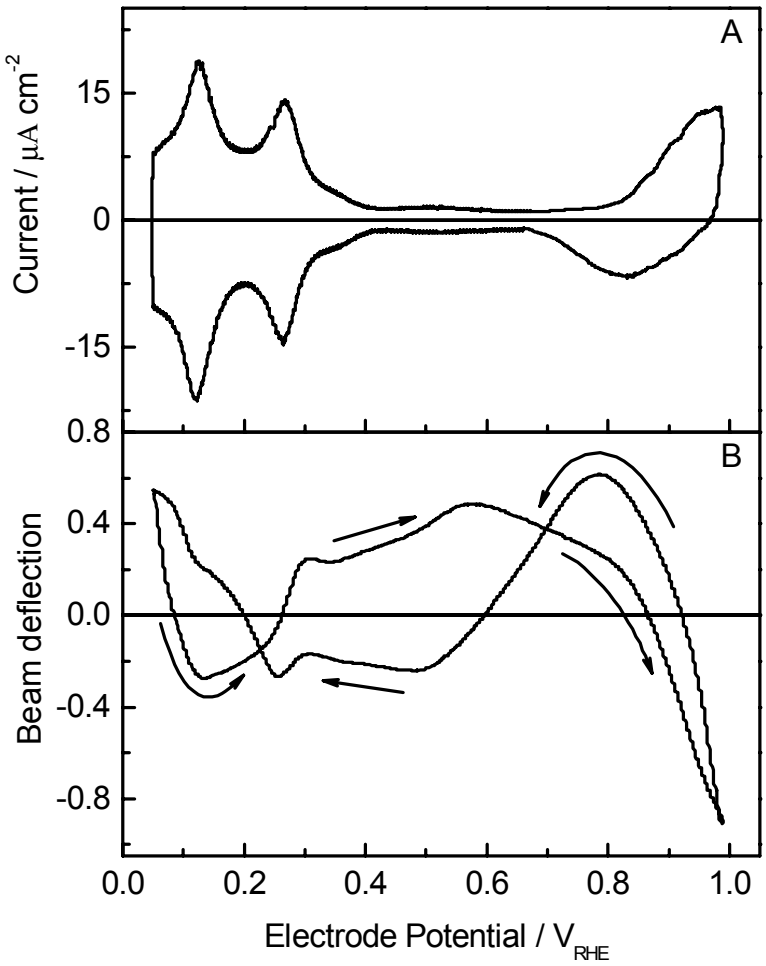


Figure S3 ESI. CV (A) and CVD (B) of MP-Pt in 1 M H_2SO_4 using an extended potential range. v = 0.015 Vs^{-1}.

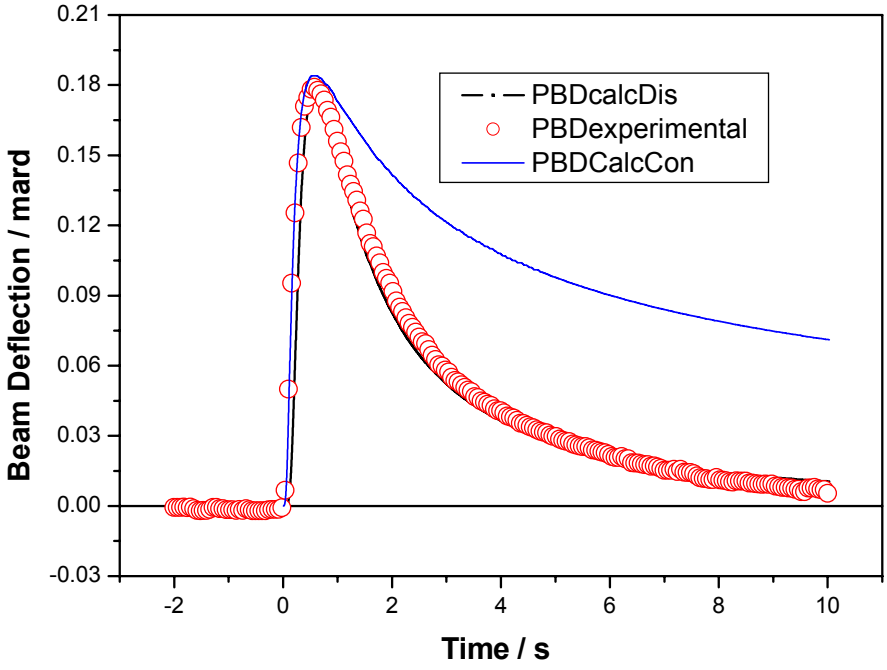


Figure S4 ESI
Comparison of chronodeflectometric data (red circles) for NPtC in 1 M H_2SO_4 with simulation according to eq. 2 (full black line). *dn/dC* = 0.011; *Do* = 2.6 x 10^{-5} cm^2/s; *x* = 96 µm; *Cs* = 1.62 x 10^{-3} mol/l. For comparison a simulated curve (full blue line) is calculated assuming that the process is not discontinuous (fast double layer charging) but continuous (diffusion controlled process) with the same constants but *x* = 55 µm and *Cs* = 1.8 x 10^{-3} mol/l. As it can be seen, only the discontinuous model fits the CD profile.

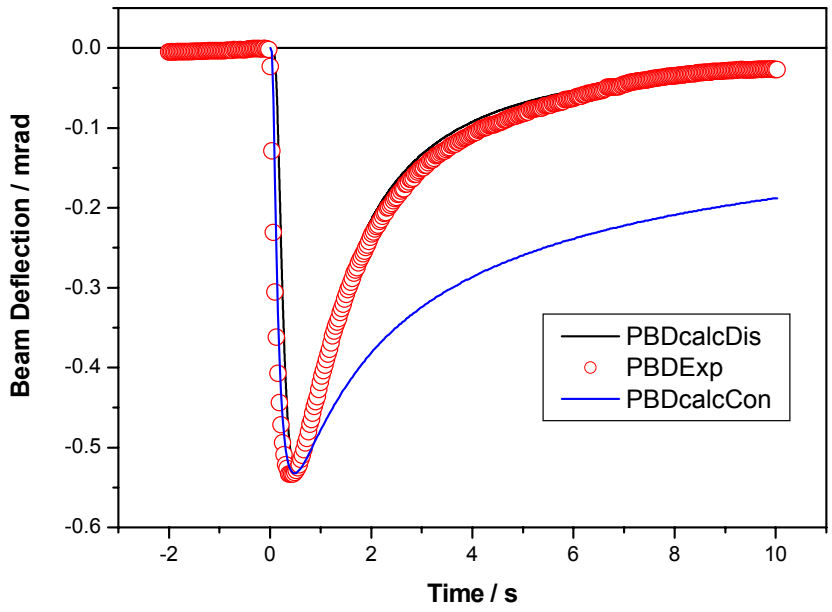
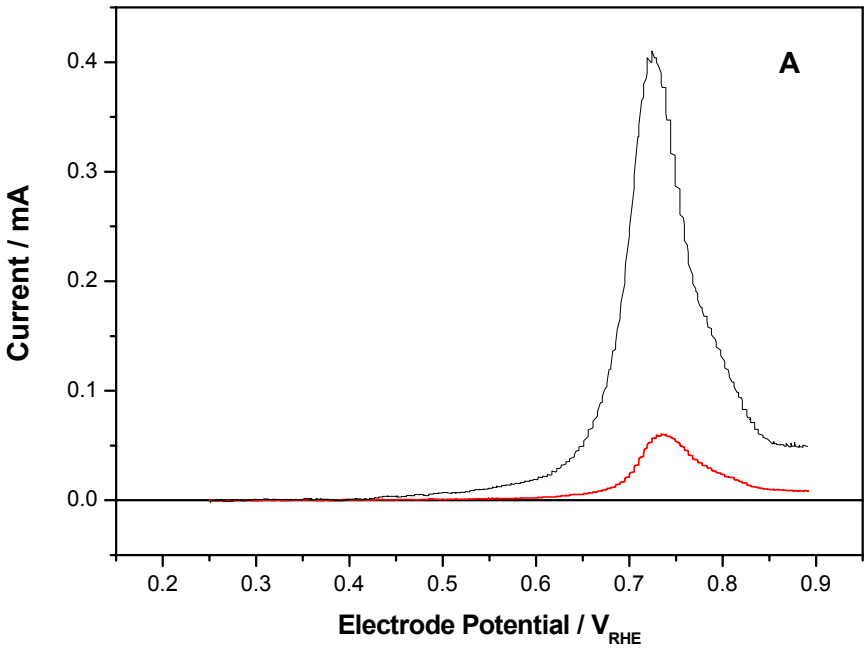


Figure S5 ESI
Comparison of chronodeflectometric data (red circles) for MP-Pt in 1 M H_2SO_4 with simulation according to eq. 2 (full black line). *dn/dC* = 0.011; *Do* = 2.6 x 10^{-5} cm^2/s; *x* = 90 µm; *Cs* = 4.26 x 10^{-3} mol/l. For comparison a simulated curve (full blue line) is calculated assuming that the process is not discontinuous (fast double layer charging) but continuous (diffusion controlled process) with the same constants but *x* = 50 µm and *Cs* = 5.2 x 10^{-3} mol/l. As it can be seen, only the discontinuous model fits the CD profile.



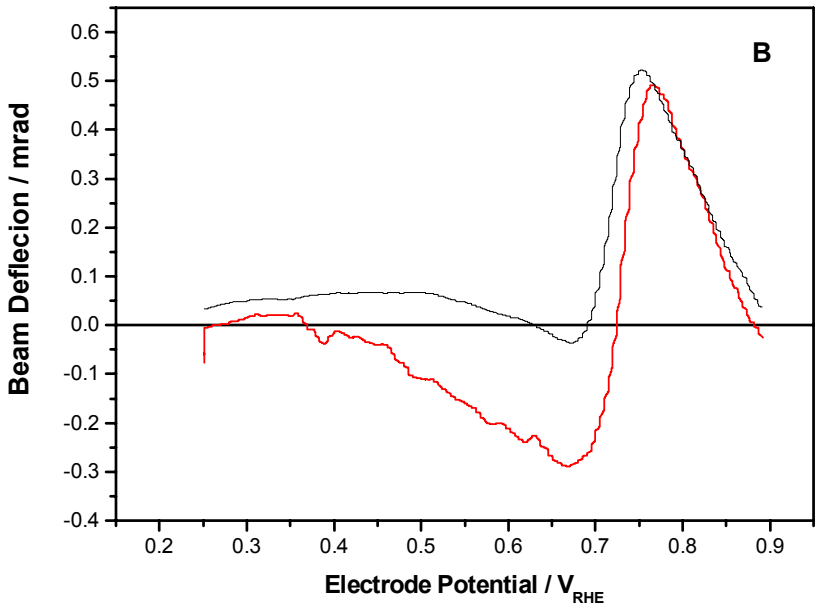


Figure S6 ESI.
CV (A) and CVD (B) for CO_{ad} oxidation in 1 M H_2SO_4 at MP-Pt. $v = 0.015$ V s^{-1}. The black lines are measured with full CO coverage, while the red lines correspond to a lower coverage.