

Figure S1. Upper panel: Simultaneous cyclic voltammogram (left ordinate) and $\Delta R/R$ vs. E ($E_{ref} = 0.2V$, right ordinate) for a 25 µm diameter Pt microelectrode in CO-saturated 0.5 M HClO₄ at 200V/s for CO adsorption potential $E_{ads} = -0.26V$. A time of 2.0 s at E_{ads} was allowed for full CO re-adsorption between every cycle (see text). **Lower panel:** Expanded section of the cyclic voltammogram (i vs E, thick line, left ordinate) shown in the Upper Panel, over the potential region 0.80 < E < 1.05 V and $-1/R(\partial R/\partial E)$ vs E curve (thin line, right ordinate) over the same potential region obtained by taking the derivative with respect to E of the fitted optical data in the Upper Panel in this figure.



Figure S2. Upper panel: Simultaneous cyclic voltammogram (left ordinate) and $\Delta R/R$ vs. E (right ordinate) for a 25 µm diameter Pt microelectrode in CO-saturated 0.5 M HClO₄ at 100V/s (left panels) and 1000 V/s (right panels) for CO adsorption potential $E_{ads} = -0.26V$. Only the potential region 0.7 < E < 1.2 V is shown. A time of 2.0 s at E_{ads} was allowed for full CO re-adsorption between every cycle (see text). **Lower panel:** Expanded section of the cyclic voltammogram (i vs E, thick line, left ordinate) shown in the Upper Panel, over the potential region 0.75 < E < 1.05 V and $-1/R(\partial R/\partial E)$ vs E curve (thin line, right ordinate) over the same potential region obtained by taking the derivative with respect to E of the fitted optical data in the Upper Panel in this figure.