Supporting Information

CO Adsorption on Au/TiO_2 Catalysts:

Observations, Quantification, and Explanation of a Broad-Band Infrared Signal

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The catalysts used in this study were commercial samples purchased from STREM Chemicals (nominal 1% Au/Al_2O_3 and Au/TiO_2). These catalysts were pretreated by the manufacturer to ensure that particles were of appropriate size (2.9 ± 0.9 nm, Fig. S1) to be active for CO oxidation.

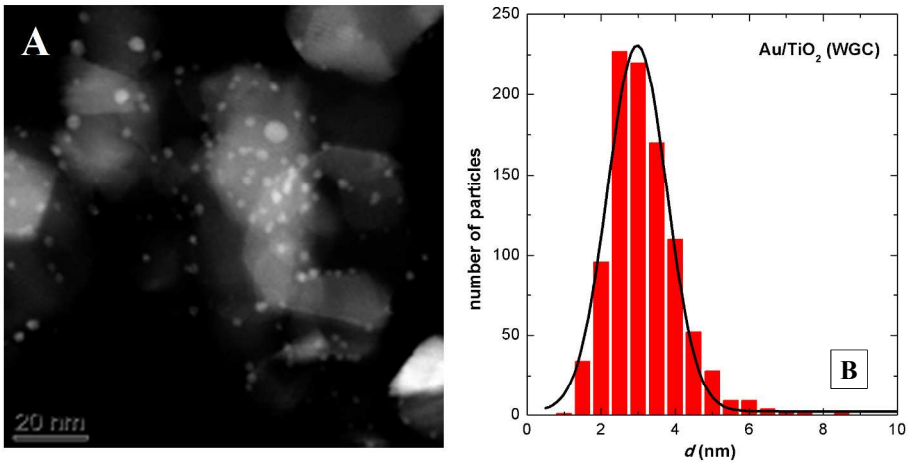

Figure S1. TEM data for Au/TiO_2. TEM micrograph (A) and Particle size distribution (B) of the catalysts used in this study. Mean calculated particle size is 2.9 ± 0.9 nm.

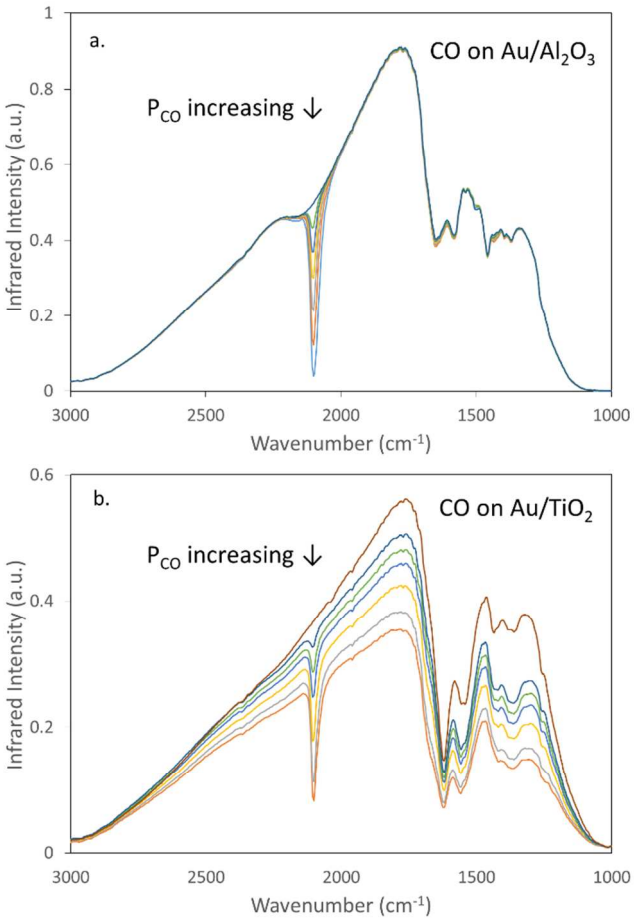

Figure S2. IR transmission spectra for CO adsorption on (a) Au/Al_2O_3 and (b) Au/TiO_2 catalysts (at room temperature for P_{CO} = 1-20 Torr).

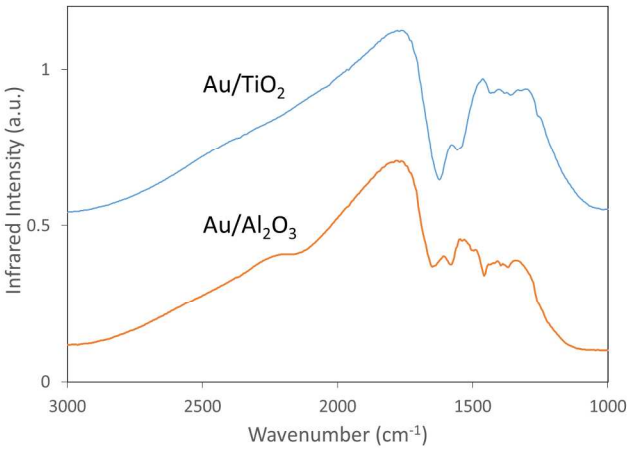

Figure S3. IR transmission spectra for Au/TiO_2 and Au/Al_2O_3 catalysts (in the absence of CO).

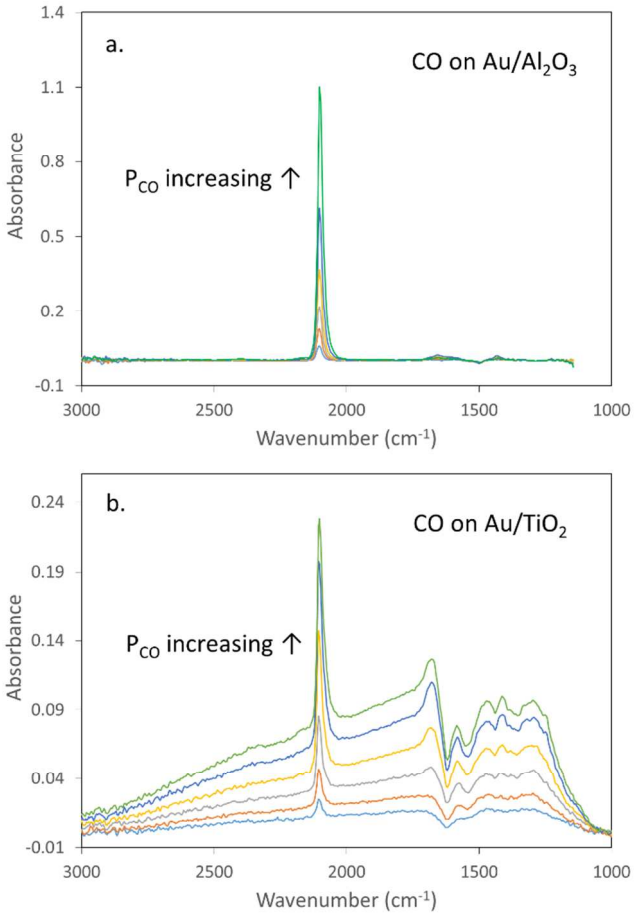

Figure S4. IR absorbance spectra for CO adsorption on (a) Au/Al_2O_3 and (b) Au/TiO_2 catalysts (at room temperature for P_{CO} = 1-20 Torr).

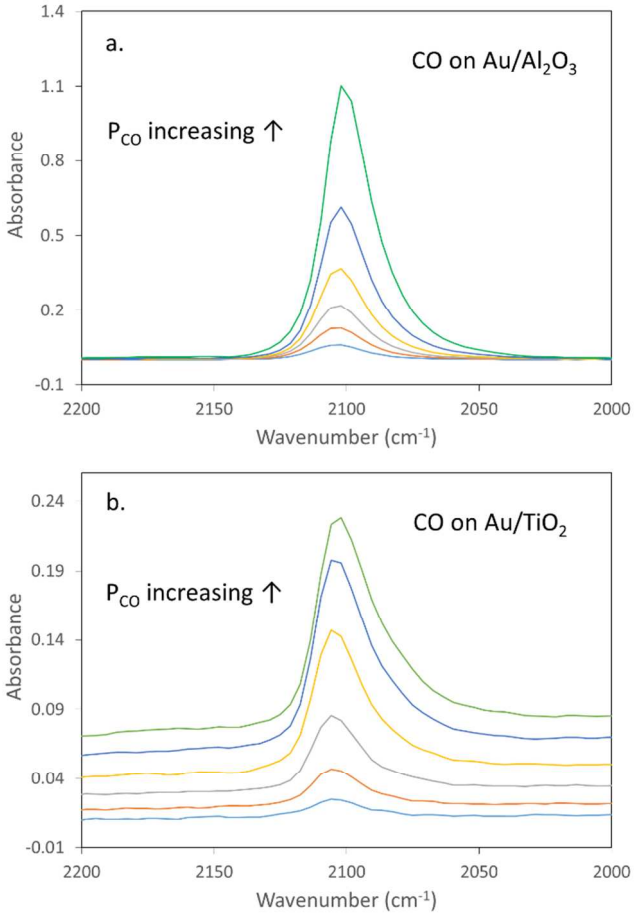

Figure S5. IR absorbance spectra for CO adsorption on (a) Au/Al_2O_3 and (b) Au/TiO_2 catalysts (at room temperature for P_{CO} = 1-20 Torr); same spectra as Figure 3 but plotted over a narrower frequency range.

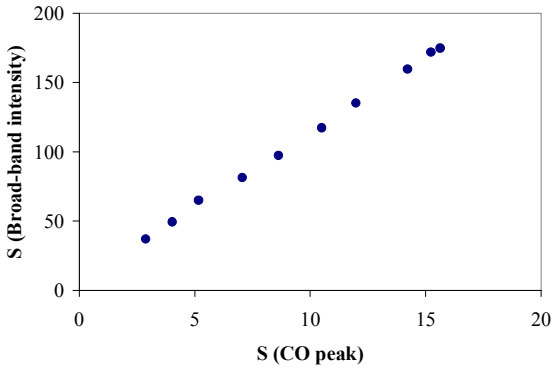

Figure S6. Correlation plot of the BB-IR and the Au-CO IR peak integrated absorbance signals.

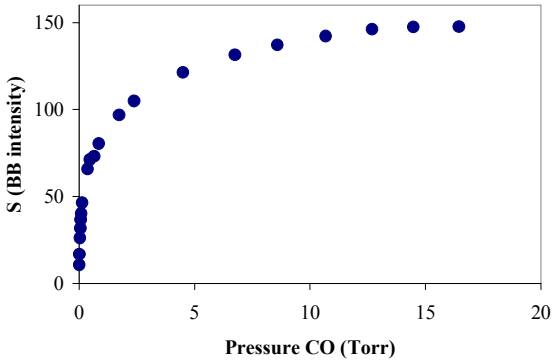

Figure S7. Isotherm for CO adsorption on Au/TiO_2 (at room temperature) using the BB-IR integrated absorbance signal.

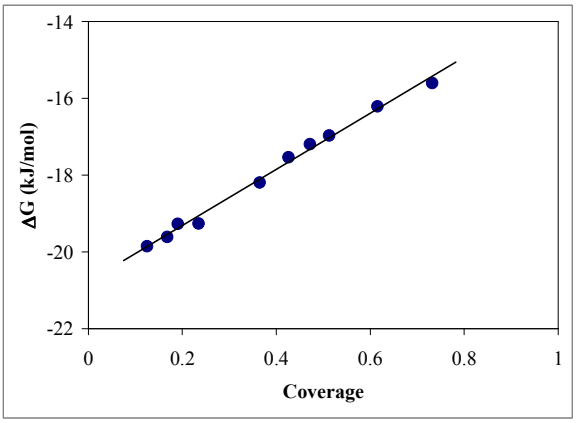

Figure S8. Temkin plot using the BB-IR signal. This plot give ΔH_0 = -62.4 kJ/mol and $\delta\Delta H$ = -7.3 kJ/mol (see text for details).

Table S1. Temkin metrics for CO adsorption on Au/TiO_2 determined from CO IR peak and BB-IR signal.

	$-\Delta H_0$ (kJ/mol)	$-\delta\Delta H$ (kJ/mol)
S (CO peak signal)	61.3 ± 0.4	7.3 ± 0.9
S (BB-IR signal)	62.3 ± 0.7	7.3 ± 0.9