ARTICLE

Morphology-electronic effects in *ultra*-model nanocatalysts under CO oxidation reaction: the case of ZnO ultrathin films grown on Pt(111)

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Supplementary Information:

The Supplementary Information provide two additional figures to the main manuscript. The first, Figure S1, shows Low-Energy Electron Diffraction (LEED) patterns that were obtained for the ZnO film grown on Pt(111) with a thickness of 1 ML as a function of the treatment ((O_2 + CO) exposure and temperature). These patterns are directly related to Figure 5 in Section B of the main manuscript, as they were acquired on the same 1 ML sample.
The second, Figure S2, corresponds to STM images and related LEED patterns acquired on the ZnO film grown on Pt(111) with a thickness of 2 ML as a function of the treatment ((O_2 + CO) exposure and temperature).
The third, Figure S3, corresponds to XPS core level spectra acquired in the binding energy interval of the Zn 3p as prepared in UHV and under (CO+O2) as a function of stepwise annealing from room temperature up to 485 K.

This Supplementary Information document provides also the link to the author's webpage for additional resources.

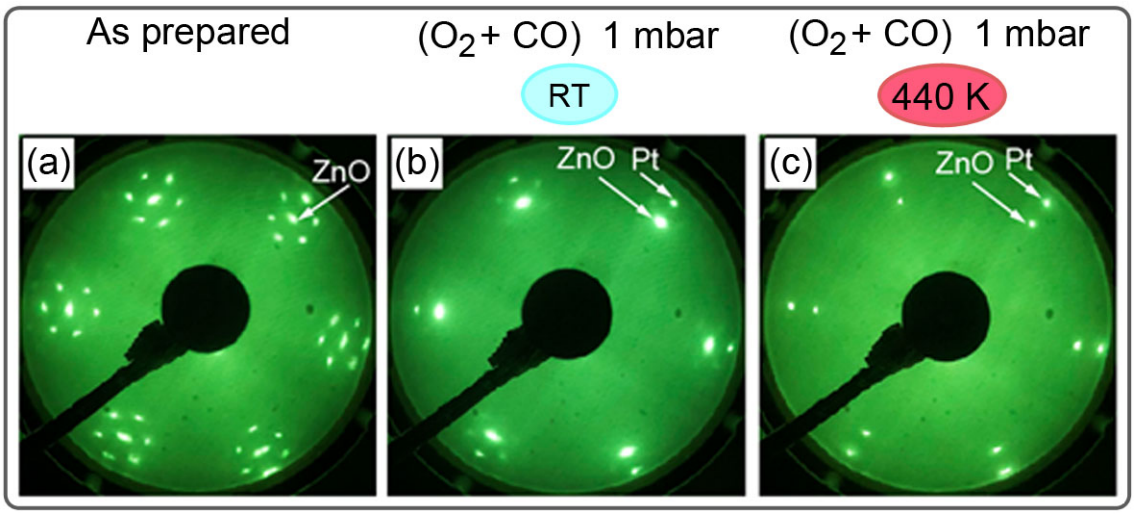

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Figure S1: LEED patterns of ZnO film grown on Pt(111) with 1 ML in thickness as a function of the treatment, and corresponding to the sample shown in the Figure 5 of the manuscript. (a) LEED pattern (electron energy 45.3 eV) of the as-grown ZnO film. (b) (electron energy 47.8 eV) LEED pattern of the same sample as in (a) after exposure to the (O_2:CO) mixture at 1 mbar at room temperature. (c) LEED pattern (electron energy 48 eV) of the same sample as in (b) after subsequent exposure to (O_2:CO) mixture at 1 mbar at 440 K.

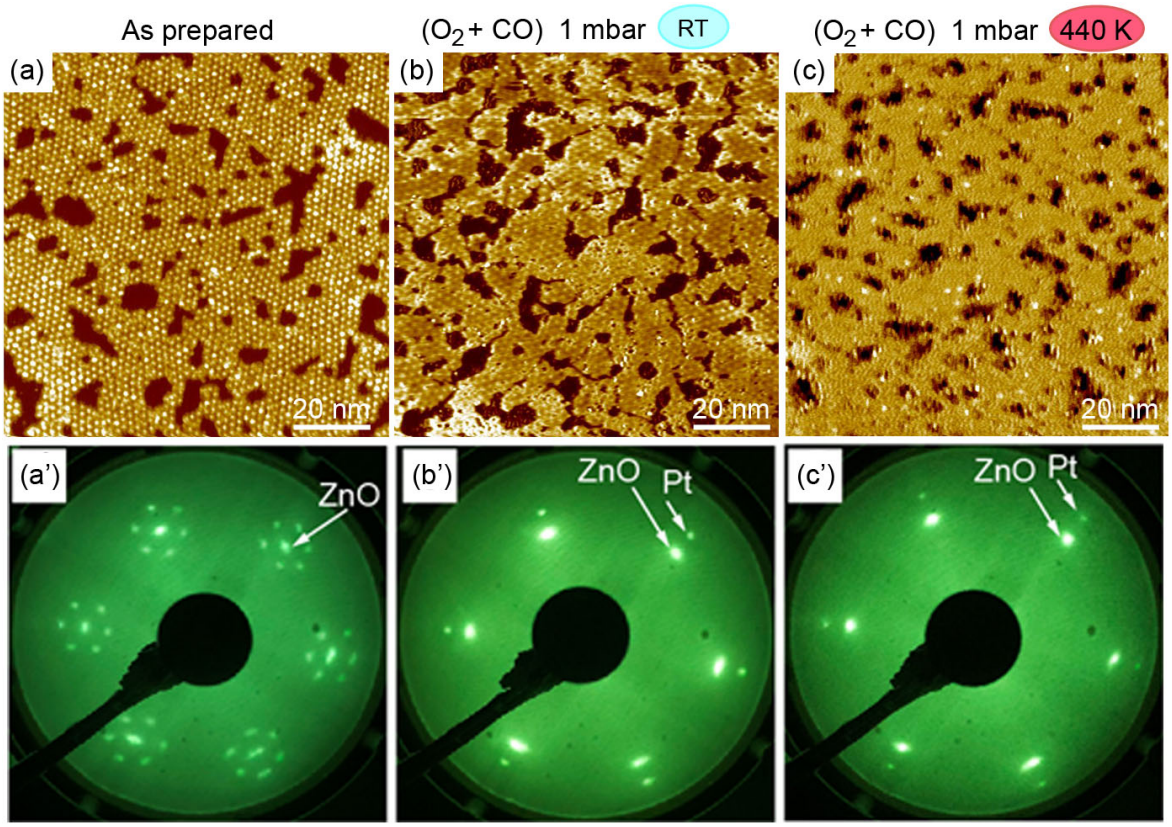

Figure S2: (a) STM image (V_{bias} = 2.6 V, I_{set} = 190 pA) of the as-grown ZnO film on Pt(111) at a thickness of 2 ML. (b) STM image (2.4 V, 190 pA), of the same sample as in (a), after exposure to the (O_2:CO) mixture (4:1) under 1 mbar of total pressure at room temperature. (c) STM image (0.8 V, 100 pA), of the same sample as in (b), after annealing at 440 K under (O_2:CO) mixture (4:1) at 1 mbar. (a') (electron energy 62 eV), (b') (electron energy 61.8 eV), and (c') (electron energy 66.8 eV) are LEED patterns corresponding the samples shown in (a), (b) and (c), respectively.

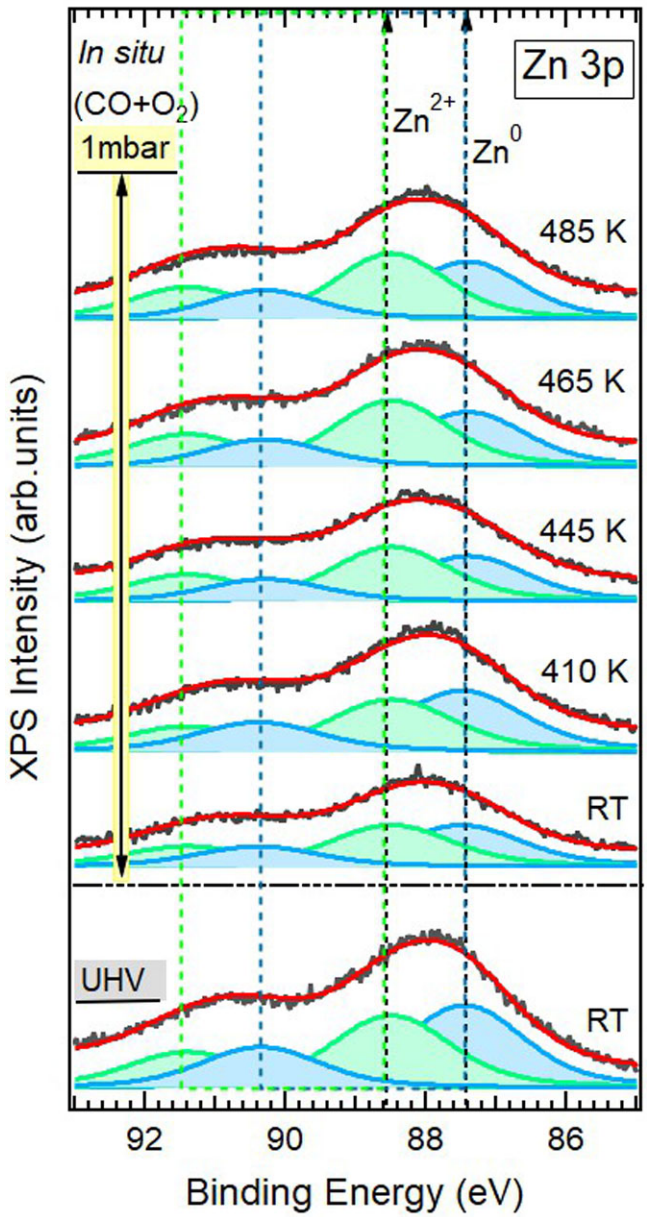

Figure S3: In situ high resolution XPS core level spectra of Zn 3p with deconvolution components of a ZnO ultrathin film on Pt(111) with a thickness of 1 ML acquired a a photon energy of hν = 165 eV as prepared (UHV) at room temperature and in situ under 1 mbar of (CO+O2) as function of the temperature from RT up to 485 K.

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