Tuning the Reactivity of Oxide Surfaces by Charge-Accepting Adsorbates

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Bridging the materials and pressure gaps: The adsorption of CO on ZnO surfaces becomes much stronger in the presence of preadsorbed CO_2. The increased strength of the interaction between CO and polycrystalline ZnO powder originates from the formation of tridentate carbonate species on the mixed-terminated $(10\bar{1}0)$ surfaces, which increase the Lewis acidity of neighboring Zn^{2+} cations.