Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supporting Information

Catalytic Oxidation of Cellobiose over TiO_2 Supported Gold-Based Bimetallic Nanoparticles

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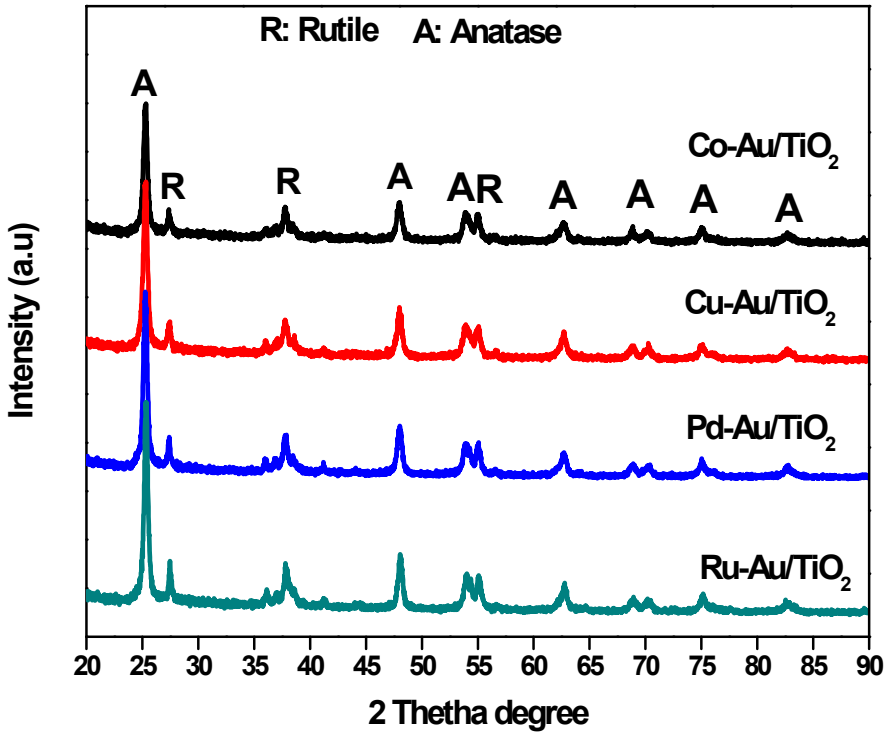
The as-synthesized catalysts were characterized by various characterization techniques such as XRD, UV-vis spectra and NH_3-TPD analysis.

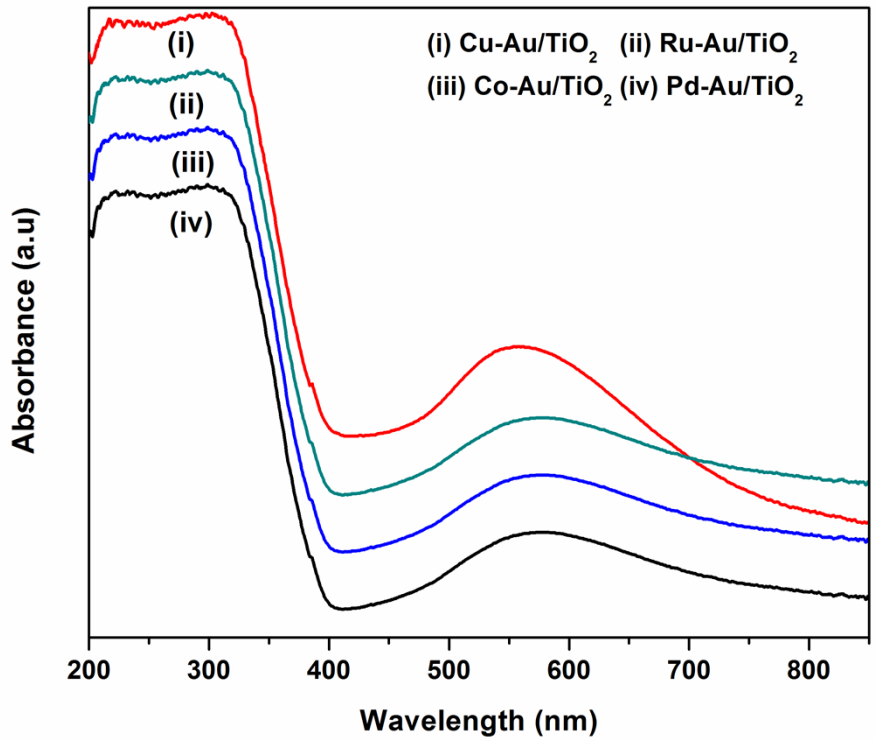
S 1 XRD patterns of bimetallic catalysts studied in this work

The XRD patterns of supported bimetallic catalysts are shown in S 1. The patterns exhibit strong diffraction peaks at $2\theta = 25^\circ$ (101) (major), 27.5° (110), 35.1° (101), 48° (200), 54.3° (105) ,55.1° (211), 64.5° (310), 70° (220), 75° (215) and 84.5° (303), suggesting a mixture of rutile and anatase phases of TiO_2 supports. The XRD characteristic peaks corresponding to palladium, gold, copper, ruthenium and cobalt were not detected for Pd-Au, Cu-Au, Ru-Au and Co-Au, respectively, because of the low amount of metals loaded, high metal dispersion and probably, the very high intensity of the TiO_2 peaks.



S 2 UV-vis spectra of the bimetallic catalysts

The UV-vis spectra of the bimetallic samples are shown S 2. The absorbance in the visible region was significantly pronounced for the Cu-Au/TiO_2 catalyst. The broad absorption peak at around 570 nm can be ascribed to the surface Plasmon resonance of Au nanoparticles.



S 3 NH3-TPD of Cu-Au/TiO_2

NH3-TPD characterization was performed to survey the acid strength of the Cu-Au/TiO_2 catalyst sample. S 2 represents the strength of acid sites on the TiO_2 support.