catalysts

MDPI

Supplementary Materials

High-Performing Au-Ag Bimetallic Catalysts Supported on Macro-Mesoporous CeO_2 for Preferential Oxidation of CO in H_2-Rich Gases

Roberto Fiorenza [1]*, Luca Spitaleri [1,2], Antonino Gulino [1,2] and Salvatore Sciré [1]

[1] Dipartimento di Scienze Chimiche, Università di Catania, Viale A. Doria 6, 95125 Catania, Italy; rfiorenza@unict.it (R.F.); lucaspitaleri@hotmail.it (L.S.); agulino@unict.it (A.G.); sscire@unict.it (S.S.)

[2] I.N.S.T.M. UdR of Catania, Viale A. Doria 6, 95125 Catania, (Italy).

* Correspondence: rfiorenza@unict.it; Tel.: +39 3936586864

S1. HRTEM and EDX of Ag/CeO_2 and $AuAg/CeO_2$

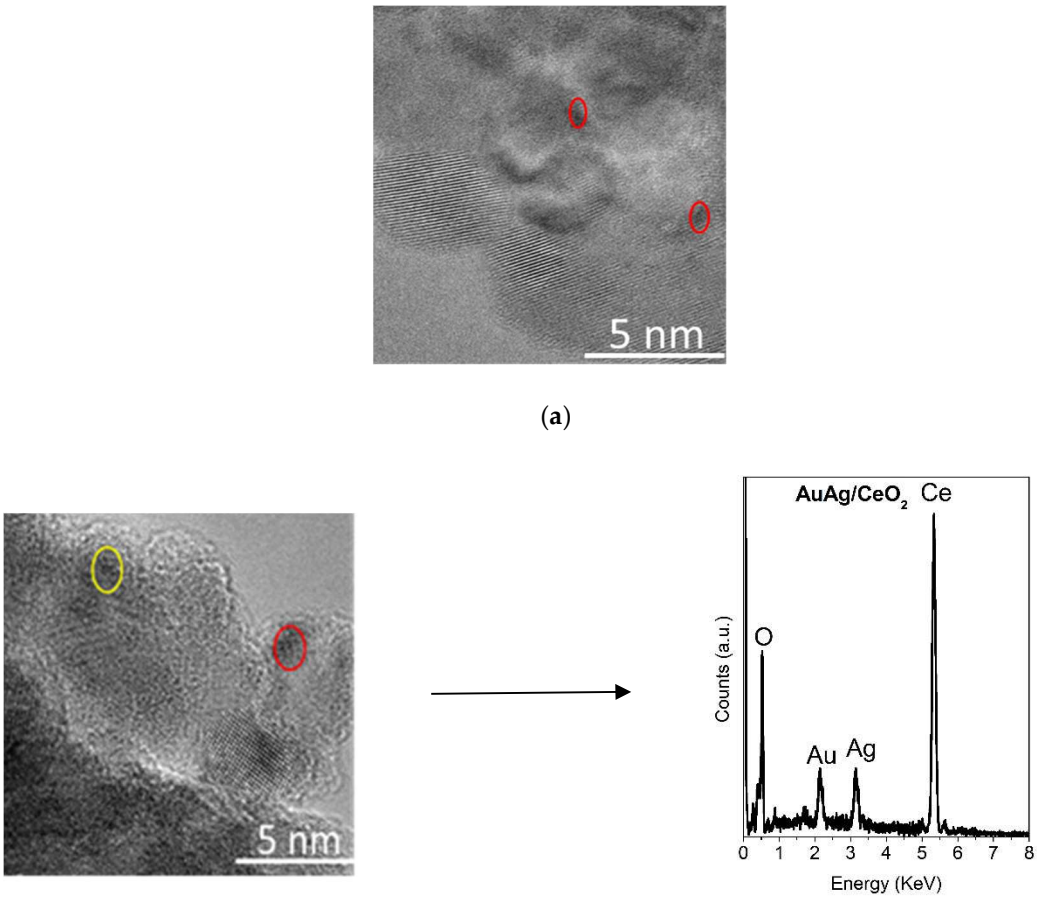


Figure S1. (**a**) HRTEM of the Ag/CeO_2 sample, the red circles evidence the presence of the silver nanoparticles; (**b**) HRTEM of the $AuAg/CeO_2$ sample, the red circles evidence the presence of the silver nanoparticles, the yellow one the presence of gold; (**c**) EDX map of the $AuAg/CeO_2$ sample.

S2. XRD Measurements

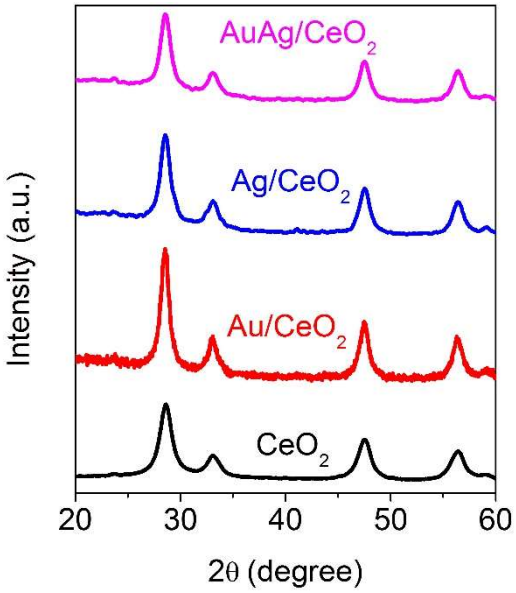


Figure S2. XRD patterns of the analyzed sample.

S3. XPS Measurements

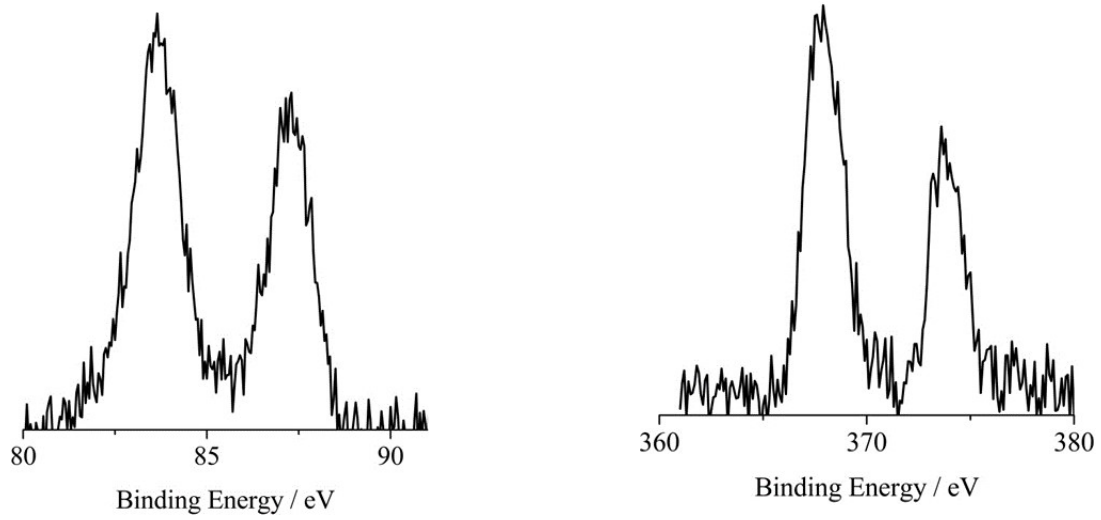


Figure S3. (**a**) Al-Kα excited XPS of the Au/CeO_2 sample in the Au 4f binding energy region; (**b**) Al-Kα excited XPS of the Ag/CeO_2 sample in the Ag 3d binding energy region.

S4. Comparison between different Au-Ag catalysts.

The AuAg/SiO_2 and AuAg/Al_2O_3 samples are prepared utilizing commercial SiO_2 (Grace, 306 m^2/g) and commercial Al_2O_3 (γ-Alfa Aesar, 221 m^2/g). The deposition-precipitation was used (see paragraph 4.1 of the manuscript) for the synthesis of the bimetallic samples.

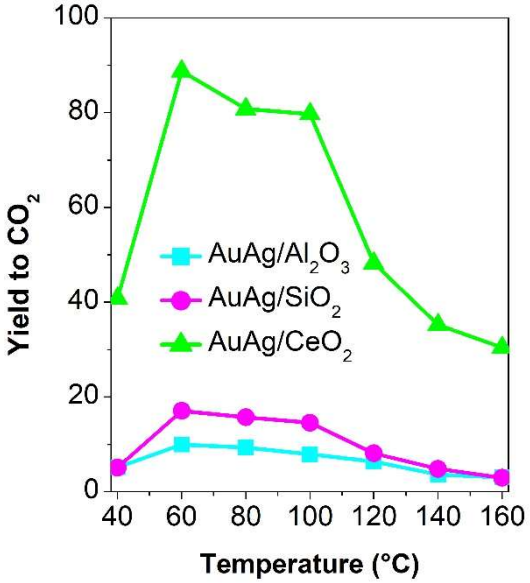


Figure S4. Comparison of the CO_2 yields over AuAg/CeO_2, AuAg/SiO_2 and AuAg/Al_2O_3 catalysts.

S5. Comparison of the catalytic activity in function of temperature of the AuAg/CeO$_2$ sample in the presence of CO$_2$ or water vapor.

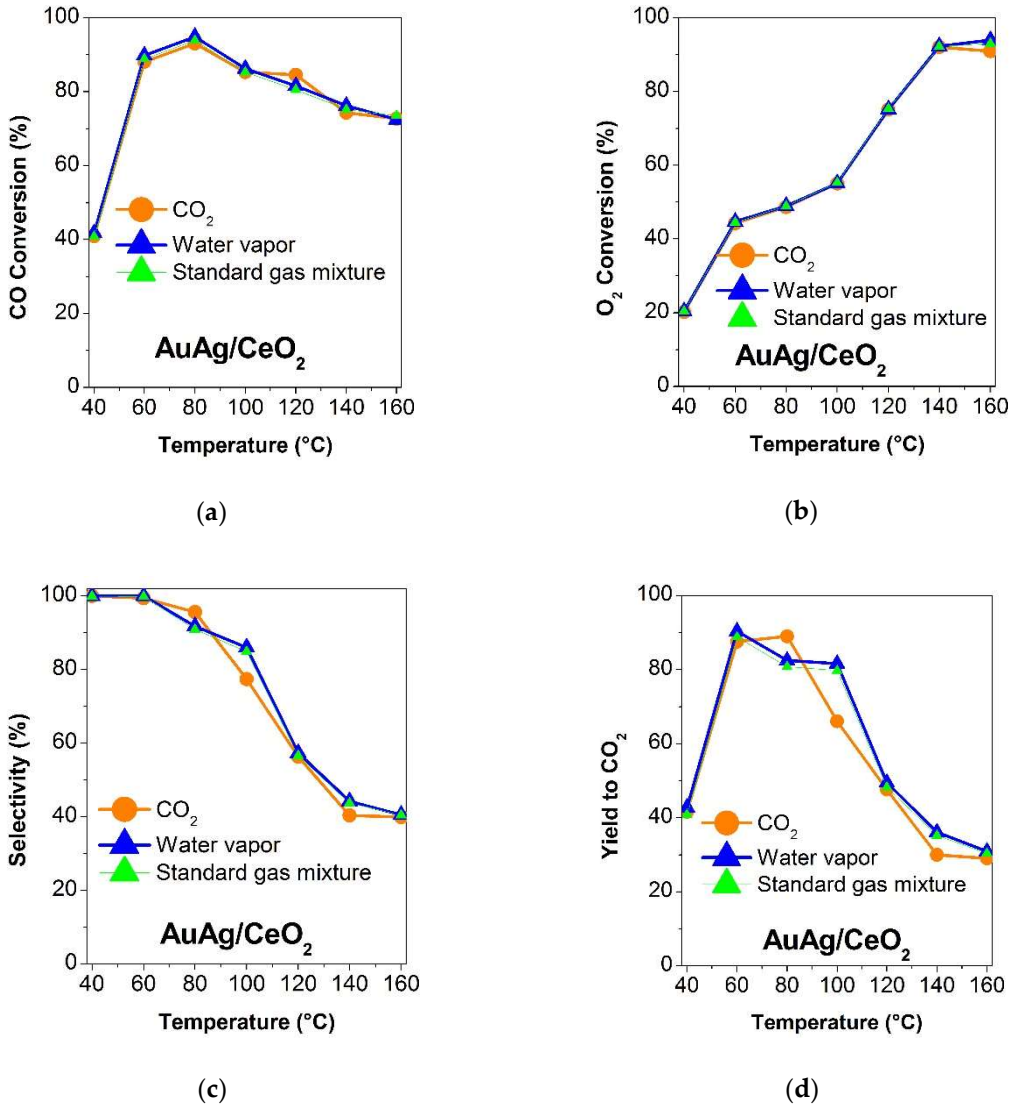


Figure S5. Catalytic activity on the CO-PROX reaction for the AuAg/CeO$_2$ sample in the presence also of CO$_2$ or H$_2$O: (**a**) Conversion of CO; (**b**) Conversion of O$_2$; (**c**) Selectivity towards the CO oxidation; (**d**) CO$_2$ yield.