Preferential Oxidation of CO over $Au/M_xO_y/Al_2O_3$ (M_xO_y = La_2O_3, CeO_2 and MgO) Catalysts: Combined Effects of Gold Size, Support and Pre-treatment Methods

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The preferential CO oxidation under excess hydrogen was examined over $Au/M_xO_y/Al_2O_3$ (M_xO_y = La_2O_3, CeO_2 and MgO) catalysts. The effects of the support and nature of gold on the catalytic activity was intensively investigated. 1 wt% Au was loaded onto the support through the deposition-precipitation method with urea (DPU). Various catalyst samples were prepared after different pretreatments. The catalytic activity appeared to be dependent on the promoter and decreased in the following order: $Au/La_2O_3/Al_2O_3$ $Au/CeO_2/Al_2O_3$ $Au/MgO/Al_2O_3$ Au/Al_2O_3. The pretreatment conditions affected the particle size of gold and oxidation state of gold, which caused the different catalytic activities. The smaller metallic gold particles were proved to be beneficial for this reaction.