SYNTHESIS, PHYSICOCHEMICAL CHARACTERIZATION AND CATALYTIC ACTIVITY OF BIMETALLIC Ag-Au on ZrO$_2$-CeO$_2$ SUPPORT

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The selective deposition of Au on the surface of nanoparticles of a primary oxide-supported metal has been performed by a redox method that is based on the reduction of the second metal ions with hydrogen adsorbed on the surface of first metal or with itself. The samples were characterized by X-Ray Diffraction Analysis (XRD), Transmission electron Microscopy (TEM), X-ray photoelectron spectroscopy (XPS). The catalytic performances of Ag-Au (1:1) Bimetallic supported on ZrO$_2$-CeO$_2$ were studied in catalytic wet air oxidation (CWAO) of Methyl Tert-Butyl Ether (MTBE) at 100°C and 80 bar of pure oxygen pressure. Besides the chemical nature and composition of support also had a great influence on the catalytic properties of the bimetallic catalyst. Therefore, another focus in this investigation is to study the effect of zirconia (ZrO2) and doped zirconia (ZrO2-CeO2 to 5, 10, 15 and 20 wt% CeO2 ) in the catalytic properties of this system, because of the complex interactions between them. The presence of ceria promotes the MTBE and intermediates mineralization for monometallic and bimetallic catalyst. A drastic extent of total organic carbon (TOC) removal was observed with addition of Silver on support (TOC conversions up to 98%). The rate of TOC removal was further enhanced by deposition of metallic Gold on the silver supported.

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**References:**


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