

Effect of the Nature of the Precursor on the Performance of Cu-Mn Catalysts for CO and VOCs Oxidation

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Abstract : The catalytic oxidation of methanol to formaldehyde is an important industrial process in which the waste gas in addition to CO contains methanol and dimethyl ether (DME). Evaluation of the possibility of removing the harmful components from the exhaust gasses needs a more complex investigation. Our previous work indicates that supported Cu-Mn oxide catalysts are promising for effective deep oxidation of these compounds. This work relates to the catalyst, comprising copper-manganese spinel, coated on carrier γ -Al₂O₃. The effect of preparation conditions on the active component composition and activity behavior of the catalysts is discussed. Different organometallic compounds on the base of four natural amino acids (Glycine, Alanine, Valine, Leucine) as precursors were used for the preparation of catalysts with Cu/Mn molar ratio 1:5. X-Ray and TEM analysis were performed on the catalyst's bulk, and surface composition and the specific surface area was determined by BET method. The results obtained show that the activity of the catalysts increase up to 40% although there are some specific features, depending on the nature of the amino acid and the oxidized compound.

Keywords : Cu-Mn/ γ -Al₂O₃, CO and VOCs oxidation, heterogeneous catalysis, amino acids

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