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STUDY OF Pt/Sn-Al CATALYST FOR ENVIRONMENTAL APPLICATION

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Abstract

Knowledge on the chemical nature of the surface of supported tin oxide compounds is crucial for understanding their behavior as catalysts and as gas sensors for environmental applications. Adding small amounts of platinum in many cases improves the catalytic activity of SnO₂-based catalysts due to synergetic effects. The aim of this study was to investigate the influence of a small amount of platinum (0.28 wt/wt%) on the catalytic properties of a SnO₂/Pt-Al₂O₃ sample obtained by co-malaxing method. XPS was used to study both the electronic state of the metal species and the elemental composition on the surface active layer of Sn-Al, Pt-Al and Sn/Pt-Al samples. Determination of the platinum dispersion on the surface was done by calorimetric measurements by using CO as a probe molecule. A good correlation between physico-chemical characteristics and catalytic properties was observed in test reactions as propylene combustion and cyclopropane isomerization.

Keywords: Pt/Sn-Al; XPS; cyclopropane isomerisation; propylene oxidation

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