

**NOVEL BIFUNCTIONAL CATALYTIC SYSTEMS FOR THE SCR OF NO<sub>x</sub>  
USING HYDROCARBONS AS REDUCTANTS**

**S.C. CHRISTOFOROU, E.F. ILIOPOULOU, E.A. EFTHIMIADIS, A.A.  
NIKOLOPOULOS and I.A. VASALOS**

*Chemical Process Engineering Research Institute and Department of Chemical  
Engineering, Aristotle University of Thessaloniki, PO Box 1517. 54006 University  
City, Thessaloniki*

**ABSTRACT**

A novel catalytic system is designed for the selective catalytic reduction (SCR) of NO<sub>x</sub> with hydrocarbons or oxygenates in the presence of excess oxygen. We divided the NO reduction into two individual steps (NO oxidation and NO<sub>2</sub> reduction), which eventually lead to the N<sub>2</sub> formation. In this study, we present experimental results for the first step of this process, that is, the NO oxidation. Co-, Pt- and Rh-based catalysts exhibited significant activity in the absence of SO<sub>2</sub>. The presence of 200 ppm SO<sub>2</sub> inhibited the NO oxidation mainly over Co/alumina. In the presence of 10% H<sub>2</sub>O in the feed the activity of all catalysts weakly decreased.