



“Gh. Asachi” Technical University of Iasi, Romania

CATALYTIC DESTRUCTION OF AROMATIC VOCs ON SCR-DeNO_x COMMERCIAL CATALYST

Liliana Lazăr^{1*}, Heinz Köser², Ion Balasanian¹, Florin Bandrabur¹

¹Technical University of Iasi, Faculty of Chemical Engineering,
Department of Engineering Inorganic Substances, Bd. D. Mangeron 71 A, 700050, Iasi, Romania

²Martin-Luther-University Halle-Wittenberg, Department of Engineering Sciences,
Institute for Environmental Technology, Geusaer 135, 06217 – Merseburg, Germany

Abstract

Aromatic volatile organic compounds (VOCs) proved to have enhanced polluting behavior upon the atmosphere and human health. Their catalytic destruction is an alternative for environmental pollution reduction in the case of gaseous emissions with low contents of VOC.

In this paper, an experimental study is presented, concerning the conversion of benzene and its mono-halogenated derivatives on SCR-DeNO_x (V₂O₅-WO₃/TiO₂) commercial catalyst, specific for the reduction process of nitrogen oxides. The catalytic oxidation was carried out at temperatures ranged between 423 °K – 623 °K in different reaction environments (air, water vapors and halogenated acids) and for low concentrations of aromatic organic pollutants (< 100 ppm). The catalytic conversion of aromatic organic volatile compounds increases with temperatures and is influenced by the presence of water vapors and halogenated acids. It can reach values of above 75%, for a temperature of 623 °K. The reaction of catalytic oxidation is incomplete and leads to CO formation.

Keywords: catalytic destruction, benzene, halogenated derivatives, SCR-DeNO_x catalyst

* Author to whom all correspondence should be addressed: e-mail: lillazar@ch.tuiasi.ro