

Surface characterization of composite catalysts prepared by sol–gel route

M. Catauro¹, I. Blanco², D. Naviglio³ and G. Dal Poggetto^{4*}

¹*Department of Engineering, University of Campania “Luigi Vanvitelli”, via Roma 29, I-81031 Aversa, Italy*

²*Department of Civil Engineering and Architecture and UdR-Catania Consorzio INSTM, University of Catania, Viale Andrea Doria 6, 95125 Catania, Italy*

³*Department of Chemical Sciences, Federico II University of Naples, Via Cintia 21, 80126 Naples, Italy*

⁴*Ecoricerche srl Via Principi Normanni 36 81043 Capua, Italy*

*corresponding author melina.catauro@unicampania.it, giogiodp@hotmail.it

Keywords. Sol–gel synthesis; Catalyst

Abstract

The aim of this work was to synthesize by sol gel route starting from metal alkoxides using different H₂O/V ratios a catalyst. Dried samples have been characterized by XRD, atomic absorption and BET analysis. Calcination of dried materials up to 600 °C in flowing air has been followed with TG–FT-IR spectroscopic analysis. Catalytic properties of calcined materials have been tested in the oxidative dehydrogenation of ethane at 600 °C and compared with those of a catalyst prepared by impregnation of Nb₂O₅ with V₂O₅ having the same composition of gel systems. An improvement of the catalytic performances of vanadium for the gel prepared with the higher H₂O/V ratio was found with respect to those of the supported catalyst due to the better interaction between vanadium and niobium.