

A MODIFIED SCHEFFE'S SIMPLEX LATTICE DESIGN METHOD IN DEVELOPMENT OF CERAMIC CARRIERS FOR CATALYTIC NEUTRALIZERS OF GAS EMISSIONS

Valery Ved, Hanna Ponomarenko *, Yevhenia Ponomarenko, Konstantin Gorbunov

*Department of Chemical Engineering, National Technical University "Kharkiv Polytechnic Institute"
2, Kirpichova str., Kharkiv 61002, Ukraine*

**e-mail: khpannap@gmail.com; phone :(+380 67) 91 02 917*

Abstract. A modified Scheffe's simplex lattice design method is proposed to study the properties of multicomponent materials. Usually, the Scheffe's simplex lattice method is used to describe three-component systems in design of chemical experiments. This modified Scheffe's method allowed determining the optimal compositions of cordierite and corundum based ceramic materials that are used as catalyst carrier for gas purification equipment. The obtained material (0.63-1.25 mm weight fraction of cordierite of 0.35 mass% fraction; <0.63 mm weight fraction of cordierite of 0.35 mass% fraction; <0.06 mm weight fraction of corundum of 0.2 mass% fraction; 1.25-2.5 mm weight fraction of cordierite of 0.2 mass% fraction) was used successfully for the manufacturing of catalytic neutralizers of gas emissions. This method was essential for the designing and manufacturing of a catalytic neutralizer for waste recycling complex at the Kharkiv - Passenger railway station in Ukraine.

Keywords: Scheffe's simplex lattice design method, ceramic carrier, catalytic converter, gas emission.

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