

## **Fine-structure oscillations in catalytic carbon monoxide oxidation on Platinum**

P. Kostrobij and I. Ryzha

*Lviv Polytechnic National University, Department of Applied Mathematics, 12 S. Bandera Str., 79013 Lviv, Ukraine,  
E-mail: ira.saj@gmail.com*

A mathematical model for reaction-diffusion processes of carbon monoxide (CO) oxidation on the platinum (Pt) catalyst surface is constructed and investigated. It takes into account:

- the peculiarities of the Langmuir-Hinshelwood mechanism for a chemical reaction;
- the two-dimensionality of the surface on which the catalytic oxidation reaction takes place;
- the finiteness of the rate of reaction product (CO<sub>2</sub>) desorption from the Pt surface.

The spatial and temporal periodic chemical oscillations of CO, oxygen, CO<sub>2</sub> surface coverages and the fraction of the catalyst surface in the nonreconstructed structure (1×1) are revealed. The influences of structural changes and inhomogeneities of the catalyst surface on the oscillatory character of reaction are investigated. It is shown that inhomogeneities lead to a fine structure.

## **References**

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