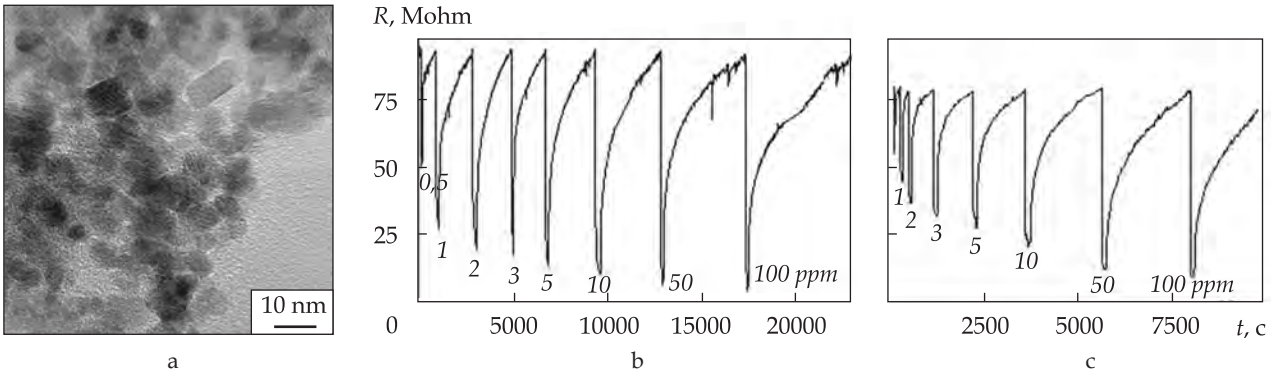
SENSOR MATERIAL RESPONSIVE TO ETHANOL AND ACETONE VAPORS



a b c

TEM image of SnO_2/Pd, Pt powder (a) and dynamic response of its film to ethanol (b) and acetone (c) vapors. Vapor concentration is given in ppm

Areas of Application

The material is to be used in gas sensitive elements of chemical sensors for measuring concentration of organic compound vapors in the air

Specification

The material consists of doped SnO_2 crystalline powder with a particle size of 10÷30 nm. The sensor elements are made using the thick films technology.

Sensitive to ethanol and acetone in the air at concentration, ppm	0.5—100
Temperature range, °C	≥200
Response time of sensor model signal (depending on gas concentration), s	10—20
Time of return to the original settings after measurement, min	5—10

IPR Protection

IPR3

Advantages

The stability of material properties is explained by its unique physical and chemical composition that is a result of using the patented synthesis method in which SnO_2 nanoparticles are formed and crystallize rapidly and simultaneously at a low temperature. For comparison, commercial SnO_2 is obtained in the amorphous state, using a long-term heat treatment at 600÷700 °C, which impairs the sensory properties of the material

Stage of Development. Suggestions for Commercialization

IRL3, TRL3
Upon request, sensor material samples are produced, information on particle size, element and phase composition, crystal structure, and technical parameters measured by model sensors of organic compound vapors in the air are provided

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