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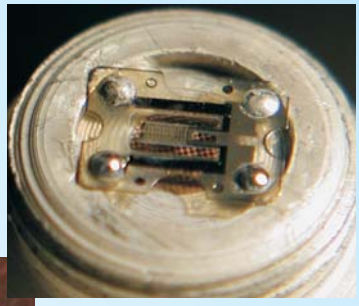
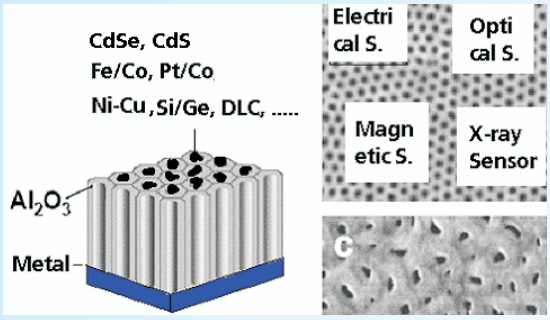
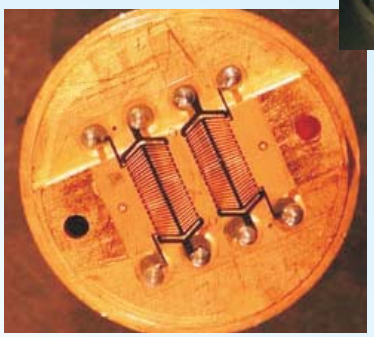
## Sensors based on nanoporous alumina



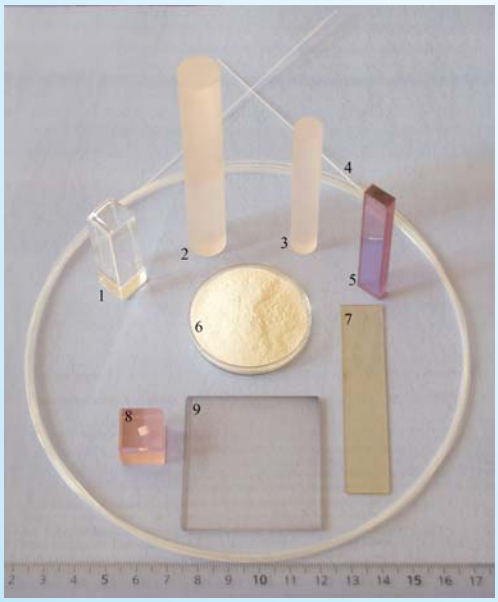
Are developed thin-film metal oxide and combined thermo-catalitic and thermoconducto-metric sensor controls on thermoelectric effect. Allows to define selectively concen-tration of hydrogen (0.01-100 vol. %) in an atmosphere of air. The opportunity of construction on the given principle of selective sensor controls of some combustible gases opens.



The multi sensors systems including some of various type of sensor controls on one substrate (bio-nanotechnology, medicine, monitoring of an environment, motor industry, a microrobotics, aviation, rocket and space techniques, etc.).

## New class of optical materials (glasses, films and ultradispers powder obtained by the sol-gel method) activated with nanoparticles $CeO_2$:Ln




Highly effective luminophors on the basis of nanoparticles $CeO_2:Tb^{3+}$ in silica shell and on the basis of the YAG ultra-dispersed powder activated with $Ce^{3+}$ ions. These luminophors can be used, respectively, in luminescent lamps and two-component (light-emitting diode luminophor) sources of lighting. In the latter case advantages of the luminophor are a wide band of luminescence (140 nm) and a long-wave position of its maximum (590 nm).

Silica glasses activated with nanoparticles $CeO_2$:Ln. These glasses can be used as active laser elements and light transforming bulb of tiny mercury lamps. Besides, they are capable to provide full cutoff of photoactive UV-radiation in a layer of 12 mm and are characterized by the increased relative intensity of magnetic dipole transitions of $Ln^{3+}$ ions.

Silica glasses activated with $Tm^{3+}$ ions possessing by effective luminescence at 460, 1450 and 1750 nm. The glass can be used as the light transformer from ultra-violet to blue region of spectrum and an active element of tunable IR-laser.

Effectively luminescent melted glass activated with $Sm^{3+}$ ions. The glass can be used as the active material of laser converters from dark blue and violet radiation to orange-red region of spectrum.

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