# Solid-state HYDROGEN sensitive MIS wafers for $H_2$ sensors

Novel Hydrogen Sensitive Elements (wafers) are used for manufacturing H2 sensors dedicated for continuous measurement of small concentrations of hydrogen in various media such as air, methane, vacuum, hydrocarbon gases, transformer oil, inert gases, etc. in the range of 1-1000 ppm in the gas leak detectors, gas analyzers, DGA (Dissolved Gas Analysis) systems and are manufactured with the help of the advanced Pulse Laser Deposition technology.

**Dedicated for OEM manufacturers of gas sensors, analyzers and DGA systems.**

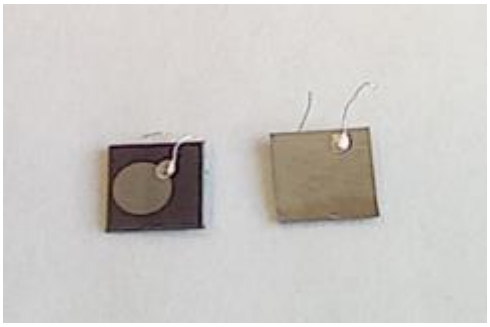
The advantages of this solid-state sensitive elements are:

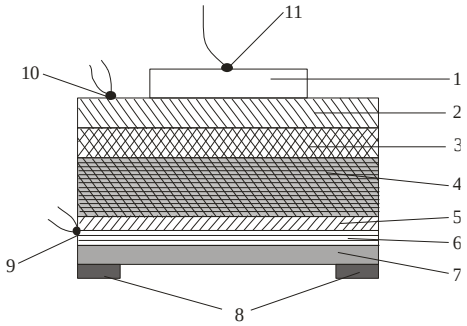
- high sensitivity (up to 0,5 ppm)
- long-term stability
- long service life, more than 10 years
- long shelf life, more than 7 years
- selectivity to Hydrogen
- ability of stable operation in conditions of vibration, low temperatures, pressurized media
- operation in conditions of high humidity

minimum cross sensitivity to HC, H2S*, N2, CO, CO2, SO2, NOx*

- possibility to design the sensing devices with the function of automatic monitoring of the performance and settings.

* follow to the manufacturer's technical recommendations






1 – Pd film; 2 – dielectric film; 3 – SiO2 layer; 4 - silicon plate; 5 - metal electrode; 6 - insulating plate; 7 – film heater; 8 – electrical contacts of the heater; 9 and 11 – electrical contacts of the MIS capacitor; 10 - thermistor

Specification that can be achieved when building hydrogen sensors based on MIS structures:

- Measured gas: HYDROGEN ($H_2$)
- Measured media: air, inert gases, methane, hydrocarbon gases, transformer oil, vacuum.
- Measurement interval: 1 – 1000 ppm
- Error: ± (0.5) ppm $H_2$
- Operating temperature: -40°C _+120 °C
- Medium pressure: max. 10 bar
- Relative humidity during operation: max. 98% with condensation
- Response time (T90) ＜60 s（100 ppm $H_2$)
- Recovery time (T10) ＜150s
- Calibration interval: 360 days.
- Expected life time 10+ years
- Shelf life:7 years