

## Lisicon solid electrolyte electrocatalytic gas sensor

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### Abstract

In this paper fabrication and examination of electrocatalytic gas sensor based on Lisicon solid electrolyte ( $\text{Li}_{14}\text{ZnGe}_4\text{O}_{16}$ ) is presented. Electrocatalytic sensors are relatively new group of gas sensor, which employ kinetics of controlled electrochemical reaction. Its working principle is based on electric current acquisition, while voltage ramp is applied to the sensor. The current-voltage plot has unique shape, which depends on surrounding gas type and its concentration. We have been previously investigating Nasicon and ceria as solid electrolytes for electrocatalytic sensor application [1].

Sensor has been prepared using thick film technology. On alumina substrate gold electrodes (ESL 8880) and Lisicon were screen-printed. Gold electrodes has been fired in 950C, while electrolyte in 900C. Electrolyte paste was prepared by mixing Lisicon powder with ESL 403 binder. Lisicon was prepared by typical solid state method [3].

Sensor was placed in the tube furnace and measurements were performed in mixtures of synthetic air, sulphur dioxide and nitrogen dioxide. Constant gas flow of 100 sccm was maintained. Current response of the sensor to linear voltage ramp (5V to -5V) was recorded. Influence of temperature is reported.

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[1] P. Jasinski, A. Nowakowski, W. Weppner, *Sensor and Materials*, 12 (2000) 89-97. [2] H.Y.P. Hong, *Mat. Res. Bull.* 13 (1978) 117.