

MICROHEATERS FOR COPPER OXIDE BASED GAS SENSORS

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In recent years, gas sensors based on oxide semiconductors such as copper oxide [1], have a very high development progress, as their market demands are high for the detection of toxic and flammable gases, as well as their low cost, functionality and higher sensor performance are necessarily at elevated operating temperatures between 200-300 °C. For these reasons, the need micro-heaters design and elaboration arises together with uniformity of thermal distribution, low energy consumption and prices, as well as compatibility with the sensor technological processes for integration in microsystems [2]. Laconte et al. presented a configuration of the micro-heater that includes all the properties listed above, the polysilicon based microheater demonstrated a temperature rise of 400 °C with a consumption of 20 mW [2]. Suehle et al. have developed polysilicon based micro-heaters, obtaining a temperature of 400 °C at 47 mW [3]. Baroncini et al. they obtained the temperature of ~ 400 °C with the consumption of 65 mW, based on the micro-heater with double coil of Pt [4]. Briand et al. have developed Pt-based micro-heater on silicon oxide substrate, obtaining 300 °C at 75 mW [5]. Mo et al. have developed Pt/Ti micro-heater on silicon oxide substrate, obtaining 400 °C by applying 9 mW [6]. Udrea et al. they obtained a temperature of 350 °C at 100 mW consumption [7].

From the above, in this paper we report about nichrome micro-heaters on glass substrate for copper oxide based gas sensors, with the possibility of raising temperatures up to 350 °C without damaging the substrate or the elements of the micro-heater, cost efficient micro-heaters and very simple technology of elaboration.

Keywords: *micro-heater, copper oxide, gas sensors, glass substrate, semiconductors.*

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