Fabrication and Characterization of MEMS-based Flow Sensors

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ABSTRACT

The purpose of this study wind speed sensor. Research on the use of Micro-electro-mechanical process technology, to produce alumina for the substrate material for the heater and the platinum thin film of hot-film flowmeter, hotline type of way to make thin-film platinum temperature set at, winds blowing in different, cause changes in the characteristics of resistance to the production of micro-wind speed sensor.

This micro-sensor compared to the overall size of the sensor used in general for small, and simple structure, small size and because it can have very good sensitivity and precision of measurement. This study will be selected on the alumina plate, the alumina substrate for polishing and cutting process to the required size, and then deposited (deposition) platinum film, the production of a micro-heater and the sensors used. Finally and then cut into required size. Designed one of its sensing mechanism further divided into single-chip and dual chip. When the gas flows through the sensor side, the client will result in sensing a change in the resistance value through comparison measurement instruments because of the different air currents caused by changes in the value of resistance, and then determine the value of fluid to determine change in wind speed. In the experiment to give 10 m / s, 20 m / s, 30 m / s, 40 m / s, 50 m / s, 60 m / s wind speed, the trend of the law of waveform changes are presented, which can effectively reach the wind speed sensor Purpose. Also at a range of sensing a change in the relationship can be expected.

Finally, by changing the resistance of different size and spacing change ... and so on, to observe the trend of sensor characteristics, and to determine the best sensing mode. And in the appendix to the market for commercial paper flowmeter characteristics of the sensing element of comparison.

Keywords : Micro-electro-mechanical systems、Deposition、Air Flow Meter、Alumine plate

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