Thesis Title	A Study on Responese Characteristics of Tin Oxide Based Semiconductor Gas Sensor
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ABSTRACT

This thesis presents the fabrication of tin oxide based thin film gas sensors. The aims are to investigate and to develop a high sensitivity and selectivity gas sensor , and also to study the effect of temperature on sensor operating point. The tin oxide-based thin films is fabricated by using a sputtering technique under Ar-O_2 gas environment. A group of samples was sintered at 800 ^{o}C for 3 hours. Properties of the films were characterized by using Scanning Electron Microscope (SEM) , x-rays Diffraction and sheet resistance measurement. It was found that the sintered film showed a good performance in sensing the alcohol at room temperature. Its response varies according to oxygen vacancy concentration in tin oxide.

The experiment on the effect of the film temperature was also carried out by varying the temperature from 25 to 250 ^{o}C , the sensor shows a higher sensitivity to carbon monoxide compare to that sensitivity at room temperature. While sensors having a high sensitivity to alcohol at 150^{o}C.

Exposure time of the sensor can be improved by adding palladium and copper into the tin oxide. The changes can be clearly observed in the case of carbon monoxide. The 1.0% mole of palladium is proved the give the best performance at 200^{o}C