

**EFFECT OF SINTERING TEMPERATURE ON
MICROSTRUCTURE AND HUMIDITY SENSING PROPERTIES OF
ZrO₂-TiO₂ FOR HUMIDITY SENSOR**

QURATULA'IN SYAHIIRAH BINTI SHAMSUL

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ABSTRACT

EFFECT OF SINTERING TEMPERATURE ON MICROSTRUCTURE AND HUMIDITY SENSING PROPERTIES OF ZrO_2 - TiO_2 FOR HUMIDITY SENSOR

Humidity sensors are widely used in domestic and industrial environments. $0.5ZrO_2$ - $0.5TiO_2$ ceramic sintered at 900 °C to 1200 °C, have been investigate for its structural and sensitivity properties at room temperature. The samples were prepared by the conventional ceramic method. Field emission scanning electron microscopy (FESEM) and impedance spectroscopy method were used for characterization of the microstructure and sensitivity properties of samples. The microstructures of the particles are in irregular shape with various particle size. The average grain size were calculated between 0.23 μm and 0.32 μm . There is no significant changes towards the size of microstructure of ceramics as sintering temperature increases. The sensitivity of materials towards humidity were investigated using impedance spectroscopy technique. The electrical impedance of samples were depended on humidity. The magnitude of impedance reflects the conductance of sensing material. 1100 °C is the optimum sintering temperature that produce highest impedance ratio than the other samples in two different relative humidity which is 25% and 61%.

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