

**EFFECT OF BISMUTH OXIDE ON ZINC OXIDE PROPERTIES FOR
VARISTOR APPLICATIONS**

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ABSTRACT

EFFECT OF BISMUTH OXIDE ON ZINC OXIDE PROPERTIES FOR VARISTOR APPLICATIONS

The effect of bismuth oxide properties for varistor applications have been investigated. The Bi₂O₃ doped ZnO with composition [(100-X)%ZnO)+(X%Bi₂O₃)]mol% have been prepared using solid state method. The structural and morphological properties of synthesized Bi₂O₃-doped ZnO structures have examined. Four different composition of Bi₂O₃ and ZnO have been applied to the samples. All the samples were characterized using Scanning Electron Microscope (SEM), X-ray Diffraction (XRD), Fourier Transform Infrared (FTIR) and UV-visible spectroscopy. The increasing of Bi₂O₃ concentration has led to decrease in the average grain size and crystallite size. Therefore, by varying the concentration of the dopant will influence the structural and morphological properties of Bi₂O₃ doped ZnO varistor and will increase the performance of varistor application. The Bi₂O₃ doped ZnO based varistor that have been sintered at 1050°C with 1.0mol% of Bi₂O₃ has obtained the smallest grain size and exhibited the most excellent varistor characteristics.