Impedance Analysis of Electrical Properties of Indium doped

ZnO-based ceramics

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Resistant is basic electron elements used in various electric device and high power transformation system. In this study, In2O3 doped multiple-metal-doped ZnO-based ceramics were prepared by the solid reaction method. The results were shown that the sintering atmosphere affect on the microstructure and electrical properties of indium doped ZnO-based ceramics, XRD, EDS, SEM, TEM were used for the sintered ceramics, DC current voltage characteristics, impedance spectrum and Hall Effect were used to analysis the electric properties of In2O3 doped ZnO-based ceramics. With fixed concentration of In2O3 doping, the reduction atmosphere sintering increased the conductivity of the sample by three to four orders of magnitude than the sample sintered in air, and the nonlinear coefficient of resistant decrease and become a linear resistors. The mechanism for this big changed is that the increase of the donor concentration in the grain and together with the decrease of density of the carrier traps localized in the grain boundaries.



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