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Effect of Zr substitution on the conductivity of $Ba_5GdTi_3V_7O_{30}$ ceramics

B B MOHANTY[a], P S SAHOO[b†], B K GIRI[c], D PANDA[d] and R N P CHOUDHARY[e]

[a]*Department of Physics, Betnoti College Betnoti, Mayurbhanj, Odisha, India*
[b]*Department of Physics, North Orissa University, Baripada, Mayurbhanj, Odisha, India*
[c]*Badbil College, Badbil, Keonjhar*
[d]*ITR, Chandipur, Balasore*
[e]*Department of Ph*ysics, I T E R, Bhubaneswar. Odisha, India
† Corresponding author. psrilly@yahoo.com

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Abstract : $Ba_5GdTi_2ZrV_7O_{30}$,-a polycrystalline tungsten bronze structure compound was developed by Solid State reaction route at high temperature (950^0C). XRD analysis confirmed orthorhombic structure of the compound. SEM study revealed non-uniform shape grains distributed homogeneously on the surface of the samples. No dielectric anomaly is observed within experimental temperature range. The variation of the ac conductivity with inverse temperature (303 K – 773K) exhibits semiconductor type negative temperature coefficient of resistance (NTCR) behavior. The separate values of activation energy in different temperature regions, recommend the mixed-type conduction process (i.e., ionic–polaronic and space charge generated from the oxygen ion vacancies) in the material.

Keywords*:* TB Structure; Solid-state reaction; XRD analysis.

[Full Paper]