**Structural and dielectric performance of (1-x) BaTiO3-X Bi (Zn2/3Ta1/3) O3ceramic for MLCC application.**

**Akankshya Mohapatra, Subhasree Sahoo, Dr. Tanmaya Badapanda.**

*Department of Physics, C.V. Raman Global University, Bhubaneswar,752054, India*

The structural and dielectric behavior of Bismuth doped Barium Titanate is studied for the possible MLCC application. (1-x) BaTiO3-X Bi (Zn2/3Ta1/3) O3 [(1-x) BT–x BZT], (x=0.05,0.1,0.15,0.2) ceramics are prepared via the solid- state reaction route. The effects of BZT substitution for BT on the crystal structure and dielectric properties are examined. The crystal Structure and phase transitions are identified by XRD. As the BZT content increases, the Curie temperature of the solid solution gradually decreases and gives rise to a diffuse phase transition. A relaxor-like behavior is obtained for the doped BT and the value of diffusivity can be calculated using the modified Curie-Weiss law. The temperature coefficient of capacitance is calculated from the dielectric constant by using the standard formula and it is verified, whether this ceramic is applicable for MLCC application or not.

**References:**

1. XIULI CHEN ,JIE CHEN ,GLLISHENG HUANG ,DANDAN MA ,LANG FANG ANDHUANFUZHOU , Relaxor behavior and dielectric propertis of Bi ( ceramics , journal of American society, 2015 .

2. LONGWEN-WU, XIAOHUI WANG ,ZHENGBO SHEN AND LONGTU LI . Ferroelectric to Relaxor transition in - Bi ( , Journal of electronic materials, 2016.

3. ALISA PATERSONA, HOI TING WONGA, ZENGHUI LIUB, WEI RENB, ZUO-GUANG , Synthesis, structure and electric properties of a new lead-free ferroelectric solid solution of (1-x) -xBi ( , Paterson et al. /Ceramics International ,2015.

4. HUA HAO,HANXING LIU, SHUJUN ZHANG, XIN SHU, TING WANG, MENGYING LIU , Design, Fabrication and Dielectric Properties in Core-double shell BaTiO3-based Ceramics for MLCC, 2014.

5). WEI PENG , LINGXIA LI SHIHUI YU , PAN YANG , KANGLI XU . Dielectric properties, microstructure and charge compensation of MnO2-doped BaTiO3-based ceramics in a reducing atmosphere,2021.