**Abstract**

The lead free piezoelectric materials are secured an important place in the field of material science and

engineering. In the present work single crystals of sodium bismuth titanate- barium titanate

(0.94NBT-0.06BT) and 0.6 wt % of Nd added NBT-BT has been grown by flux method. The addition

of 0.6 wt% of Nd shows the inhomogeneity in melt and the crystals collected from the top, middle and

 bottom portions of the crucible have been characterized for their structural and dielectric properties.

The Nd concentration is found to be more in the crystals grown from the bottom portion of crucible and

it was confirmed by optical and structural analysis. After the addition of Nd the color of the crystal

changes form pale yellow to muddy green. The depolarization temperature (Td) and the temperature

where the dielectric constant reaches its maximum (Tm) are increased from 442 K to 475 K and 595 K

and 628 K respectively after the addition the of Nd in NBT-BT.