**HIGHLIGHTS**

* BaTi0.85Sn0.15O3 sintered at 1350°C for 3h has the highest dielectric constant $\left(ε\_{r}^{'}\right)$ with the lowest loss $(tanδ)$ at 300K.
* Pure BaTiO3 shows indirect bandgap of 1.80 eV while it becomes direct bandgap of 1.82eV for 15% replacement of Ti4+ by Sn4+.
* Strong off-center displacement for Ba2+ and Ti4+ is observed in BTSO sample due to the hybridization with oxygen octahedra.
* Electrical conductivity, $σ\_{ac}$, in BaTi0.85Sn0.15O3 annealed at 1350℃ shows maximum response to frequency of applied field.
* BaTiO3 and BaTi0.85Sn0.15O3 samples are semiconductive in between 370 K to 415 K under a 1000 kHz applied electric field.
* Capacitance $(C)$ is maximum for BaTi0.85Sn0.15O3 sample annealed at 1350℃ and $C=112.95 nF$ at room temperature.
* The discharge energy density is maximum for BaTi0.85Sn0.15O3 sample annealed at 1350℃.