

# ELECTRICAL RESISTANCE PROPERTIES OF *IN-HOUSE* PREPARED SAMARIUM TITANATE ( $\text{Sm}_2\text{Ti}_2\text{O}_7$ ) FOR HIGH TEMPERATURE SENSOR APPLICATION

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*Samarium titanate (STO), with  $\text{Sm}_2\text{Ti}_2\text{O}_7$  structure, stands out among perovskite-like layered materials due to its impressive thermal stability and high Curie temperature ( $T_c$ ). These properties make STO an excellent candidate for high-temperature sensor applications and capable of functioning effectively up to 1250 °C. In the present study, the samarium titanate (STO) powders were synthesized by solid-state reaction method. These powders were used to prepare thin tapes by tape casting method. This technique is more advantageous for making miniaturized sensors due to its ability to produce uniform and thin layers of material. The resulting tapes were then stacked and subjected to sintering at 1450 °C for two hours. The samples were characterized for their suitability as high temperature sensor applications. The study also includes measuring and comparing the electrical resistivity of both bulk form samples and those prepared by tape casting method. The comparative study provided insights into the advantages of using tape-cast STO in sensor technology.*

**Keywords:** *Samarium titanate (STO), Tape casting, high temperature sensors, Perovskite-like layered (PLS), Resistivity*

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