

# SYNTHESIS AND CHARACTERIZATION OF $(\text{Bi}_2\text{O}_3)_{1-x}-\text{Y}(\text{Sm}_2\text{O}_3)_x(\text{Tm}_2\text{O}_3)_y$ TERNARY SYSTEM

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Solid oxide fuel cells (SOFCs) are very efficient electro-chemical energy-conversion systems because of their high energy conversion efficiency, high power density, clean and environmentally friendly output when hydrogen is used as fuel, and flexibility in using various fuels.  $\text{Bi}_2\text{O}_3$ -based materials have been considered as potential materials for solid oxide fuel cell electrolyte due to their high oxygen ionic conductivity. They have also been shown to be the most promising electrolytes for intermediate operating temperatures (600–800 °C) of SOFCs since they have higher oxygen ion conductivity compared with other materials with similar properties. Many researchers have focused on the properties of oxide doped  $\text{Bi}_2\text{O}_3$ -based electrolytes operating at intermediate temperatures and most of them have attempted to overcome the in stability problems of the materials to obtain better performance in technological applications