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INFLUENCE OF SR ADDITION IN CONDUCTIVITY AND MICROSTRUCTURE OF TiO₂-BASED ELECTRONIC CERAMICS

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The effect on the conductivity properties of Sr-doped TiO₂ electronic ceramics was investigated. For this, we used the single sinter process, Sr-doped TiO₂-based, which were sintered at the temperature of 1400°C for 1 h. The composition ranged of 0.00 – 2.00% of Sr was studied and the experimental evidence shows that small quantities of Sr alter the conductivity of the grain and grain boundary of TiO₂. The contribution of grain and grain boundary conductivity of TiO₂ was evaluated using impedance measurements along with microstructural properties. The impedance measurements shows an increase of the grain conductivity and a decrease in the conductivity of the grain boundary up to the limit of the addition of 1% of Sr, on the other hand, with the increasing addition of Sr, the grain conductivity tends to decrease, and grain boundary increase. The SEM images shows the microstructure formed by the addition of Sr. With additions ? 0.50% Sr, the microstructure and conductivity change dramatically, demonstrating the influence of the Sr conductivity on TiO₂. Therefore, dopant, such as Sr on TiO₂, play a special role in the morphology of the grain and grain boundary of these materials.