

Title: Soft Power Competition: A Comparative Analysis of China and the US in South Asia

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Abstract : Here we report the synthesis of Sm-doped $\text{Na}_{0.5}\text{Bi}_{4.5}\text{Ti}_4\text{O}_{15}$ ($\text{Na}_{0.5}\text{Sm}_{0.5}\text{Bi}_4\text{Ti}_4\text{O}_{15}$) lead-free ceramics via a conventional solid-state technique. Investigations of $\text{Na}_{0.5}\text{Bi}_{4.5}\text{Ti}_4\text{O}_{15}$ (NBT) and $\text{Na}_{0.5}\text{Sm}_{0.5}\text{Bi}_{4.5}\text{Ti}_4\text{O}_{15}$ (NSBT) ceramics were demonstrated in detail to understand the composition-based structure-property of Aurivillius compounds and related [functional material](#). [Dielectric properties](#) for frequency and temperature in a wide range were analyzed. The conduction [activation energy](#) values of NSBT ceramics are obtained to be 1.40 eV, whereas, the NBT ceramics get the value to be 1.31 eV. At higher temperatures, the conduction [activation energy](#) value of NSBT ceramics is 1.32 eV for both frequencies of 100 Hz and 1 kHz, whereas, for NBT compounds, the calculated value is 1.27 eV for both frequencies. The simulation performed on the impedance data for capacitive and resistance elements shows well-fitting curves which indicates a single relaxation behavior in the material. Similarly, the AC-conductivity data were analyzed which gives different conduction processes and relaxation activation energies in the NSBT ceramics.

Keywords: $\text{Na}_{0.5}\text{Sm}_{0.5}\text{Bi}_4\text{Ti}_4\text{O}_{15}$ Dielectric Aurivillius-ceramics $\text{Na}_{0.5}\text{Bi}_{4.5}\text{Ceramics}$

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