

# Evaluation of the Radiofrequency Dielectric Properties of the CaMoO<sub>4</sub> Matrix with 12% TiO<sub>2</sub> Addition Under Temperature Variation

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Calcium molybdate (CaMoO<sub>4</sub>) has a wide range of applications in optical filters, solid-state lasers, and solid-state scintillators [1-3]. In this work, CaMoO<sub>4</sub> was prepared through the solid-state reaction method and then was performed addition of 12% by mass of TiO<sub>2</sub> (CMO12). X-ray diffraction analysis (XRD) showed that there was no formation of secondary phases after the addition of TiO<sub>2</sub>.

Complex impedance spectroscopy was performed, where permittivity ( $\epsilon'$ ) and loss tangent ( $\tan \delta$ ) values at room temperature typical of ceramic materials were obtained. The Temperature Capacitance Coefficient (TCC) study was also carried out and showed that the CMO12 composite presented a TCC = 0 ppm. $^{\circ}\text{C}^{-1}$  at 10 kHz, demonstrating that it is a thermally stable material at this frequency. The study of AC conductivity at different temperatures demonstrates a thermally activated conduction process with an activation energy value ( $E_a$ ) equal to 0.99 eV. Results obtained demonstrated that CMO12 could be employed in devices that operate in radiofrequency.

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