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**Key words:** Thorium oxide, UV absorption, Strontium.

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## Interactive Effect of Nano-CaCdAl<sub>2</sub>O<sub>5</sub> Contents on Opto-Electrical Constants of PVA-OH Nanocomposites

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### Abstract

The performance of nano-CaCdAl<sub>2</sub>O<sub>5</sub> intercalated in PVA-OH as flexible NC films for opto-electrical applications had been studied. TEM images for NPs showed an average size of 40 nm. The semi-spherical shape of NPs and its dispersion in PVA-OH matrix was inspected by SEM, while structural and interaction between components in NCs have been elucidated by XRD and FTIR respectively. The optical respond of NC films was evaluated via UV-visible spectroscopy. The significant enhance in the absorbed of incident light, as well as the increase refractive index of PVA-OH in NCs by 1.5 times were noticed. Meanwhile, band gap energy ( $E_g$ ) drastically reduced from 5.06 of pure matrix to 2.91eV for NC containing 8wt% NPs. The electrical behavior of NCs was probed by LCR-meter. Ac-conductivity of NCs was increased into several magnitudes compared with pure PVA-OH as a result of the increasing frequency and NPs contents. The current-voltage (I-V) behavior and the dc-conductivity for PVA-OH/CaCdAl<sub>2</sub>O<sub>5</sub> at different voltages had been investigated.

**Keywords:** Opto-electrical properties, ac-conductivity; Scherrer length; Tauc's gap; I-V mechanism

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