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"INVESTIGATION ON OPTO-ELECTRICAL BEHAVIOURS OF CONDUCTING POLYMER COATED LITHIUM ZIRCONIUM OXIDE NANO STRUCTURED FILLER LOADED POLYVINYL ALCOHOL NANO COMPOSITES FOR SOLAR CELL APPLICATIONS"

Thesis submitted in partial fulfilment of curriculum prescribed for the award of the degree of

BACHELOR OF ENGINEERING
IN
POLYMER SCIENCE & TECHNOLOGY

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ABSTRACT

Polymeric nanocomposites were reported to enhance the barrier properties and lifetime of organic solar cells. In this investigation, we are reporting the development of one such nanocomposites by dispersing the polyaniline(PAni) coated lithium zirconate (Li_2ZrO_3) nanoparticles in polyvinyl alcohol (PVA) matrix. It was found that the incorporation of Pani-Li_2ZrO_3 nanoparticles has not affected the transparency of the PVA matrix in the visible region at the same time it generates fluorescence emission. The emission intensity increases with the nanoparticles concentration. The dielectric properties (dielectric constant and dielectric loss) of PVA/Pani-Li_2ZrO_3 nanocomposites increase with increase in the nanoparticles concentration, while it decreases with an increase in frequency. The alternating current conductivity increases with the increase in filler loading and frequency. The dissipation factor also increases with nanoparticles addition and decreases with frequency.