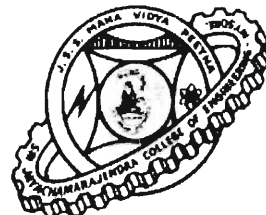


**JSS Mahavidyapeetha**  
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**“INVESTIGATION ON OPTO-ELECTRICAL BEHAVIOURS OF  
CONDUCTING POLYMER COATED LITHIUM ZIRCONIUM OXIDE  
NANO STRUCTURED FILLER LOADED POLYVINYL ALCOHOL  
NANO COMPOSITES FOR SOLAR CELL APPLICATIONS”**

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

**BACHELOR OF ENGINEERING  
IN  
POLYMER SCIENCE & TECHNOLOGY**

by

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IISc, Bangalore.**

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**June, 2013**

## 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 ( $\text{Li}_2\text{ZrO}_3$ ) nanoparticles in polyvinyl alcohol (PVA) matrix. It was found that the incorporation of Pani- $\text{Li}_2\text{ZrO}_3$  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- $\text{Li}_2\text{ZrO}_3$  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.