# Thermally activated conductivity of Si hybrid structure based on ZnPc thin film

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## Abstract

In this study, an analysis of temperature-dependent electrical characteristics of ZnPc/p-Si structure has been presented. Conduction mechanisms that are accounted for the organic/inorganic devices are evaluated. At low forward voltage, current-voltage (I-V) characteristics show ohmic behavior, limiting extraction of holes from p-Si over the ZnPc/p-Si heterojunction. Thermally activated conduction mechanism appears to be space-charge-limited conduction mechanism, taking into account the presence of an exponential trap distribution with total concentration of traps, N-t of 5.77 x 10(25) m(-3). The series resistance is found to be temperature dependent. There is a critical point on the regime of series resistance at 200 K. The capacitance varies with temperature at different rates below and above room temperature, indicating a variation in the dielectric constant.

## Keywords

**KeyWords Plus:** SCHOTTKY-BARRIER DIODES; CARRIER TRANSPORT MECHANISMS; INORGANIC CONTACT BARRIERS; ELECTRICAL-PROPERTIES; ZINC PHTHALOCYANINE; SERIES RESISTANCE; SOLAR-CELL; PHOTOVOLTAIC PROPERTIES; PHOTODYNAMIC THERAPY; LOW-TEMPERATURES

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