Temperature Dependence Current – Voltage Characteristics of Mo/Cu(In,Ga)Se$_2$/CdS/ZnO Heterojunctions

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The standard and temperature dependent current-voltage (I-V) characteristics of Cu(In,Ga)Se$_2$ – based heterojunction solar cell in a temperature range from 170K to 370K were measured. The dark and illuminated I-V characteristics were characterized for the diode ideality factor (A), series resistance (Rs) and the saturation current density (Jo) which is related to the current transport mechanism. The temperature dependence of A and Jo from our results indicated that the tunneling contributed to the recombination in the space-charge region is significant.