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| **Title:** | Performance Investigation Of The Lifetime Of Solar Cell Using Surface Photovoltage (Spv) Method And Efficiency Measurement | | |
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| **Abstract:** |  |
| In this paper the optical characterisation of mono crystalline fabricated solar cells has been investigated focusing on the minority carrier flow using surface photovoltage (SPV) technique and the efficiency of the solar cells has been evaluated by means of the sun simulator analysis.  A computer-controlled incidence measurement system was designed for SPV measurements based on a mini mono-chromator, which was driven by a stepper motor to various wavelengths in the spectral range of 400–1200 nm. SPV is typically measured using Standard Research 510 lock-in amplifiers. A LabVIEW interface is employed for system control and data acquisition. Every step of the measurement has been described in detail throughout the whole experimental procedure. After calculating the experimental data obtained from monocrystalline silicon solar cell measurement, the length (L) of the minority carrier diffusion and lifetime (?) were calculated and results derived were 92 µm and almost 3.135 µs respectively. Typically in the laboratory experiment the efficiency is found in the range of 8–12% but with our experimental data we have successfully found the efficiency as 16.05% using the Sun Simulator K3000 LAB55. The results from the experimental data has promising application to assess the quality of the solar cells that are being used. | |