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| **Title:** | Temperature Variant Performance Analysis of a 635nm Ga0.73In0.27P/(Al0.5Ga0.5)0.5In0.5P MQW SCH Red Laser | | | |
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| **Published Journal Name:** | AIUB Journal of Science and Engineering (AJSE) | | | |
| **Type of Publication:** | Journal | | | |
| **Volume:** | 13 | | Issue | 1 |
| **Publisher:** | AIUB Office of Research and Publication | | | |
| **Publication Date:** | August 2014 | | | |
| **ISSN:** | | 1608-3679 (Print) | | |
| **DOI:** |  | | | |
| **URL:** | https://orp.aiub.edu/ajse-13-01 | | | |
| **Other Related Info.:** |  | | | |
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| **Abstract:** |  |
| In this work, the effects of variation of temperature on the performance characteristics of a GaInP – based 635 nm multiple quantum well (MQW) separate confinement heterostructure (SCH) Red Laser are obtained through computations. The material gain of Ga0.73In0.27P/(Al0.5Ga0..5)0.5In0.5P MQW edge emitting laser (EEL) is theoretically obtained. The peak material gain obtained from the analysis is used to study the performance of the designed laser. A maximum output power of 95.75mW and a maximum modulation bandwidth of 18.6 GHz are obtained for this designed laser at 82 mA injection current where the temperature is 300Kand the differential gain is 8×10-16 cm2. Further by increasing the temperature, a performance analysis of the designed laser exposes that above 350 K, the steady state carrier density cannot hold on to a value above threshold level causing the laser to stop working. | |