



Optica Applicata 2005(Vol.35), No.3, pp. 627-634

Magnetic field sensors based on undoped $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}/\text{InP}$ heterostructures fabricated by molecular beam epitaxy and metalorganic chemical vapor deposition

Tomasz PRZESLAWSKI, Andrzej WOLKENBERG, Janusz KANIEWSKI, Kazimierz REGINSKI, Agata JASIK

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Keywords

Hall sensors, magnetoresistors, InGaAs/InP heterostructures, electronic transport, geometric correction factor, molecular beam epitaxy (MBE), metalorganic chemical vapor deposition (MOCVD)

Abstract

In this paper we, describe the design and fabrication process of Hall and magnetoresistor cross-shaped sensors using $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}/\text{InP}$ layer structures as active media. The influence of geometric correction factor G_H on sensitivity parameters of these devices has been investigated. The results have been used in order to optimize the structure design behavior at temperatures ranging from 3 to 300 K. The large changes of the galvanomagnetic parameters vs. magnetic field and temperature allow these devices to be used as signal and measurement magnetic field sensors.



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