World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Radiation Effects and Defects in InAs, InP Compounds and Their Solid Solutions InPxAs1-x

Authors : N. Kekelidze, B. Kvirkvelia, E. Khutsishvili, T. Qamushadze, D. Kekelidze, R. Kobaidze, Z. Chubinishvili, N. Qobulashvili, G. Kekelidze

Abstract : On the basis of InAs, InP and their InP_xAs_{1-x} solid solutions, the technologies were developed and materials were created where the electron concentration and optical and thermoelectric properties do not change under the irradiation with Φ = 2•10¹⁸n/cm² fluences of fast neutrons high-energy electrons (50 MeV, Φ = 6·10¹⁷e/cm²) and 3 MeV electrons with fluence Φ = 3•10¹⁸e/cm². The problem of obtaining such material has been solved, in which under hard irradiation the mobility of the electrons does not decrease, but increases. This material is characterized by high thermal stability up to T = 700 °C. The complex process of defects formation has been analyzed and shown that, despite of hard irradiation, the essential properties of investigated materials are mainly determined by point type defects.

Keywords : InAs, InP, solid solutions, irradiation
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020