Opto-Electronics Review, 2015, volume 23, issue 3, pp. 200-207

Background donor concentration in HgCdTe

Izhnin, I. I.; Mynbaev, K. D.; Voitsekhovsky, A. V.; Korotaev, A. G.; Fitsych, O. I.; Pociask−Bialy, M.; Dvoretsky, S. A.

DOI: https://doi.org/10.1515/oere-2015-0029

Abstract:

Studies of background donor concentration (BDC) in HgCdTe samples grown with different types of technology were performed with the use of ion milling as a means of eliminating the compensating acceptors. In bulk crystals, films grown with liquid phase epitaxy and films fabricated with molecular beam epitaxy (MBE) on Si substrates, BDC of the order of $\sim 10^{14}$ cm^{-3} was revealed. Films grown with metal−organic chemical vapour deposition and with MBE on GaAs substrates showed BDC of the order of $\sim 10^{15}$ cm^{-3}. A possibility of assessing the BDC in acceptor (arsenic)−doped HgCdTe was demon− strated. In general, the studies showed the effectiveness of ion milling as a method of reducing electrical compensation in n−type MCT and as an excellent tool for assisting evaluation of BDC.