Solid State Science and Technology, Vol. 15, No 2 (2007) 98-102
ISSN 0128-7389

ANNEALING EFFECTS ON ELECTRICAL CHARACTERISTICS OF GaAs IMPLANTED WITH 100 MeV ^{56}Fe and ^{120}Sn IONS

Yousuf Pyar Ali[a], K.V. Sukhatankar[b], A. M. Narsale[c]

[a] *Department of Physics, Hadharamout University, Mukalla, Yemen*

[b] *Department of Physics, Gogate-Jogalekar College, Ratnagiri- 415612, India*

[c] *Department of Physics, University of Mumbai, Vidyanagari, Mumbai-400098, India*

ABSTRACT

Single crystal n-GaAs substrates have been implanted at room temperature with 70 MeV ^{56}Fe and ^{120}Sn ions to a fluence of $1x10^{18}$ ions/m^2. The electrical characteristics were investigated after implantation and annealing up to 850°C by current voltage measurements. Low temperature resistance measurements of these samples show that the ^{56}Fe implanted samples annealed to 350°C and ^{120}Sn implanted samples annealed to 450°C are dominated by a variable range hoping conduction, whereas for the ^{56}Fe implanted samples annealed to 450°C and 550°C and ^{120}Sn implanted samples annealed to 550°C and 650°C the electrical conduction is due to hoping between neighboring defect sites.

http://journal.masshp.net/wp-content/uploads/Journal/2007/Jilid%202/Yousuf%20Pyar%20Alia%2098-102.pdf

REFERENCES

[1] Thompson, P.E. (1991); Nucl. Instr. and Meth. B, 59/60, 592.
[2] Rao, M. V. (1993); IEEE Trans. Electron Dev. 40, 1053.
[3] Ali, Y.P., Narsale, A.M., Bhambani, U., Damle, A., Salvi, V., Arora, B., Shah, A. and Kanjilal, D. (1996); Nucl. Instr. and Meth. B, 117, 129.
[4] Brudnyi, M.A., Krivov, M.A. and Potapovet, A.I. (1980); Solid State Commun. 34, 117.
[5] Davis, E.A. and Mott, N.F. (1970); Philos. Mag. 22, 903.
[6] Bottger, H. and Bryksin, V.V. (1976); Phys.Status Solidi (b), 78, 9
[7] Kato, Y., Shimada,T., Shiraki, Y. and Komatsubara, (1974); J. Appl. Phys. 45, 1044.
[8] Short, K.T. and Pearton, S.J. (1988); J. Electrochem.Soc. 135, 2835.