Abstracts

Dislocation Density and Sheet Resistance Variations Across Semi-Insulating GaAs Wafers

R.T. Blunt, S. Clark and D.J. Stirland. "Dislocation Density and Sheet Resistance Variations Across Semi-Insulating GaAs Wafers." 1982 Transactions on Microwave Theory and Techniques 30.7 (Jul. 1982 [T-MTT] (Joint Special Issue on GaAs IC's)): 943-949.

Dislocation densities and sheet resistances have been measured across (001) orientated wafers cut from Cr-doped liquid encapsulated Czoehralski (LEC) grown semi-insulating (W) GaAs diodes. A defect-sensitive etch was used to reveal dislocations while a novel scanning technique has been developed for measurement of sheet resistance. The general patterns of dislocation density and sheet resistance variations are shown to be similar at the seed end of the crystal. Both agree well with recent work on electron trap density variations across a GaAs wafer and with a theoretical study of the genesis of dislocations during LEC growth of GaAs. Dislocation interactions during crystal growth have been shown to occur even at the seed end of the boule. The pattern of sheet resistance variations across wafers is shown to change down the length of the boule.

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