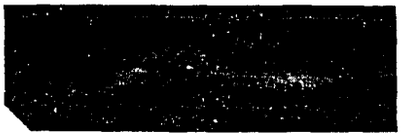

Fig. 3
EBIC signal of the p-n junction at ~100K. (Mag: 1500X)

A refined method is being developed in order to try to determine the diffusion length of the charge carrier in the vicinity of the junctions.

The EBIC method appears to be an important tool for the study of injection lasers, especially for junction location determination in those cases where cross doping is suspected of causing type conversion.

Pb-SALT GRADED-GAP HETEROSTRUCTURES FOR PHOTO-VOLTAIC IR DETECTORS

S. Rotter

Pb-salt graded-gap heterostructures were formed [1] using a meltback and regrowth method. A layer of p-type $Pb_{0.8}Sn_{0.2}Te$ is grown on a polished substrate of the same composition x by means of a liquid phase epitaxial technique. A second melt, for the growth of n-$PbTe_{0.92}Se_{0.08}$, under undersaturated conditions is brought into contact with the solid while cooling down. Meltback occurs followed by regrowth. The multilayer structure is characterized by a graded-gap transition region at the diode junction as evidenced by X-ray diffraction measurements. The I-V and the C^{-2}-V plots show a turning point at a back bias of ~-150 mV. We attributed this behavior to an extended depletion-like region, which might also account for the fact that a high back bias of -1.7 V can be applied without breakdown for a detector with λ_{peak} ~ 10 microns.

REFERENCE:

[1] Rotter, S., in: Proceedings of the 3rd International Conference of Infrared Physics, Zurich, July 1984, p. 380.

CRITERION FOR PREDICTING THE MORPHOLOGY OF CRYSTALLINE CUBIC PRECIPITATES IN A CUBIC MATRIX [1]

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The present work is concerned with the configuration of precipitates having cubic crystal symmetry in a cubic matrix. The

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shape and orientation of the precipitates were determined by minimizing the elastic strain energy, while neglecting surface energy effects. Lee, Barnett and Aaronson [2] have shown that only spherical or plate-shaped precipitates are associated with minimum strain energy. By equating the exact expression for the energy of an infinite coherent plate-shaped precipitate with an approximation suggested for the energy of a spherical precipitate, a simple criterion was derived. The criterion permits the prediction of the shape and orientation of the precipitate associated with minimum strain energy, and allows identification of the basic elastic parameters which determine this configuration. When compared with exact numerical results, good agreement was obtained.

The criterion predicts that the minimum strain energy is associated with a plate-shaped precipitate, parallel to its {100} plane when $HC_{44} > C^*_{44}/A^*$ and the anisotropy factor of the precipitate $A^* > 1$, and parallel to its {111} plane when $C_{44} > F^*\{111\}C^*_{44}/A^*$ and $A^* < 1$. In all other cases, a spherical precipitate is associated with minimum strain energy. H is a parameter which depends on the anisotropy of the matrix. F^* is an orientation factor which depends on the anisotropy of the precipitate.

REFERENCES:

[1] Schneck, R., Rokhlin, S. I. and M. P. Dariel, Met. Trans. (1985), in press.

[2] Lee, J. K., Barnett, D. M. and Aaronson, H. I., Met. Trans. 88, 963 (1977).

$NpGa_4$ - STRUCTURAL AND MOSSBAUER EFFECT STUDIES[+]

D. Dayan, J. Gal and M. P. Dariel

Within the framework of our studies of gallium-rich lanthanide (Ln) and actinide (An) binary systems, we have undertaken a study of Np-Ga intermetallic compounds. Previous studies have shown the existence of the $LnGa_6$ compounds for all Ln elements (with the exception of Eu) and of $PuGa_6$. On the other hand, no such compound was found in the light actinide systems (An=Th, U). With respect to

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