

0000 3721



BR99H0118

INIS - BR -- 3659

**SCIENTIFIC
PROGRAM
and
ABSTRACTS**

XIII SLAFES

**Simpósio Latino Americano de
Física do Estado Sólido**

5 -10 November 1995 Gramado, RS, Brazil

INSTITUTO DE FÍSICA

UFRGS

L

CPMo4c

Corrugation of the (311)A interface found by Raman scattering in GaAs/AlAs superlattices

S.W. da Silva, Yu.A.Pusep, J.C.Galzerani, D.I.Lubyshev* and P.Basmaji*

DF, Universidade Federal de São Carlos, C.P.676, 13565-905 São Carlos, SP, Brasil.

*Instituto de Física de São Carlos, Universidade de São Paulo, SP, 13560-970, São Carlos, SP, Brasil.

As it was established in [1] by an analysis of the RHEED oscillations, the (311)A interface in the GaAs/AlAs superlattices (SL's) is disturbed by periodic corrugations. In this work we present the Raman scattering spectra of the $(\text{GaAs})_n(\text{AlAs})_n$ SL's grown by MBE on the (311) GaAs substrates which testify to the corrugation of the (311)A surface.

The back-scattering spectra measured at $T=80$ K were taken with the samples grown on the (311)A surfaces. The thicknesses of the layers were chosen so that the estimated coherence length of optical phonons parallel to the layers was less than the periodicity of the corrugation [2]; thus, the expected corrugation will not be averaged by the high-index confined optical modes. The comparison between the (311)A and the reference (001) SL's grown simultaneously allowed us to detect the splitting between the optical phonons confined in the narrow and wide parts of the GaAs layers formed by the interface corrugation.

The analysis of the observed splitting gives the height of the corrugation of about 2-3 ML's which is in good accordance with the recent RHEED data [3].

[1] R.Nötzel, N.N.Ledentsov, L.Däweritz, M.Hohenstein, K.Ploog, Phys.Rev.Lett. 67, 3812 (1991)

[2] Yu.A.Pusep, S.W. da Silva, J.C.Galzerani, D.I.Lubyshev, V.Preobrazhenskii, P.Basmaji, to be published in Phys.Rev.B.

[3] M.Wassermeier, J.Sudijono, M.D.Johnson, K.T.Leung, B.G.Orr, L.Däweritz, K.Ploog, Phys.Rev.B. 51, 14721 (1995)