

TABLE I. MREI-model parameters for  $\text{Ga}_{1-x}\text{Al}_x\text{As}$ .<sup>a</sup>

Mass As, Al, Ga	74.92,	26.98,	69.72
$\epsilon_\infty(\text{AlAs})$ , $\epsilon_\infty(\text{GaAs})$	8.5	10.9	
$\omega_{\text{AlAs}}(\text{TO})$ , $\omega_{\text{gap}}$	364,	252	
$\omega_{\text{GaAs}}(\text{TO})$ , $\omega_{\text{loc}}$	268,	356	
$\omega_{\text{AlAs}}(\text{LO})$ , $\omega_{\text{GaAs}}(\text{LO})$	402,	292	
$F_{\text{AlAs0}}$ , $F_{\text{GaAs0}}$ , $F_{\text{Al-Ga0}}$ , $\theta$	262.38,	304.54	138.20 0.1484

<sup>a</sup> $\omega$  in  $\text{cm}^{-1}$  and  $F$  in  $10^4 \text{ cm}^{-2} g$ . For definition of symbols, see Ref. 1. Except for  $\omega_{\text{gap}}$  and  $\omega_{\text{loc}}$  frequencies, no other mixed-crystal data have been used in the calculation of parameters of last line.

where  $m$  and  $\mu$ , respectively, denote atomic and reduced mass, indeed predict that  $\text{Ga}_{1-x}\text{Al}_x\text{As}$  is a two-mode system. Next, we perform a two-mode calculation based on the properties of the end member crystals. The derived parameters along with the physical properties of the crystals are given in Table I. Using the method of Ref. 1, the results obtained are presented in Fig. 1, where

the experimental data of Ref. 6 are also shown. We conclude that (i) the MREI-model mass criterion predicts the correct mode behavior of the III-V mixed crystal  $\text{Ga}_{1-x}\text{Al}_x\text{As}$ , and (ii) the model also predicts well the concentration dependence of the mode frequencies of this system.

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<sup>1</sup>I. F. Chang and S. S. Mitra, Phys. Rev. **172**, 924 (1968).

<sup>2</sup>O. Brafman, I. F. Chang, G. Lengyel, S. S. Mitra, and E. Carnall, Phys. Rev. Letters **19**, 1120 (1967); in *Localized Excitations in Solids*, edited by R. F. Wallis (Plenum, New York, 1968), p. 602.

<sup>3</sup>J. Parrish, C. H. Perry, O. Brafman, I. F. Chang, and S. S. Mitra, in *II-VI Semiconducting Compounds*, edited by D. G. Thomas (Benjamin, New York, 1967),

p. 1164.

<sup>4</sup>I. F. Chang, S. S. Mitra, J. N. Plendl, and L. C. Mansur, Phys. Status Solidi **28**, 663 (1968).

<sup>5</sup>For a theoretical discussion of this splitting, see A. A. Maradudin and J. Oitmaa, Solid State Commun. **7**, 1143 (1969).

<sup>6</sup>M. Ilegems and G. L. Pearson, Phys. Rev. B **1**, 1576 (1970).

## ERRATA

**Relativistic Band Structure and Electronic Properties of SnTe, GeTe, and PbTe**, Y. W. Tung and M. L. Cohen [Phys. Rev. **180**, 823 (1969)]. The estimate for the spin-orbit splitting for PbTe at  $\Gamma$  [p. 824, fourth line after Eq. (2)] should be 1.09 eV and not 1.82 eV. This smaller splitting results in an upward shift of the third valence band in Fig. 3; the shape of the band is unchanged. The shifts of the energies for this band is the sym-

metry points  $\Gamma$ ,  $X$ ,  $L$ ,  $K$  are 0.66, 0.45, 0.73, and 0.38 eV, respectively.

**Optical Phonons in Sodium Chlorate**, C. M. Hartwig, D. L. Rousseau, and S. P. S. Porto [Phys. Rev. **188**, 1328 (1969)]. In Table I, the  $65 \text{ cm}^{-1}$  line in the  $A$  symmetry column should be in the  $E$  symmetry column. The  $86 \text{ cm}^{-1}$  line in the  $E$  symmetry column should be in the  $A$  column.