

## Comments on "The Anderson-Grüneisen parameter for 16 crystals of cubic symmetry"

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# Comments on "The Anderson-Grüneisen parameter for 16 crystals of cubic symmetry"

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It is pointed out that the method of calculating the Anderson-Grüneisen parameter from SOEC and TOEC data used by Tripathi *et al.* was proposed by the author several years ago. In fact, the major part of their paper is a mere duplication of the author's own paper. No new conclusions were reached in their paper.

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In a recent communication, Tripathi *et al.*<sup>1</sup> reported the values of the Anderson-Grüneisen parameter  $\delta$  for 16 cubic crystals calculated using SOEC and TOEC data. The method they used was proposed by the author<sup>2,3</sup> as early as 1974 and has been widely used by several authors to calculate the temperature dependence of the bulk modulus,<sup>4,5</sup> the second Grüneisen constant,<sup>6</sup> and to estimate the temperature dependence of the TOE constants of Ge.<sup>7</sup>

In their paper, Tripathi *et al.*<sup>1</sup> repeated the calculations for the crystals Cu, Ag, Au, Al, Si, Ge, GaAs, and GaSb. The  $\delta$  value for Au that they reported seems to be wrong, in spite of the fact that they used the same TOEC data used by the author earlier.<sup>6</sup> The definitions of  $\gamma$  and  $\delta$  are not correctly given. The expression for  $B'$  should not involve  $B_{00}$  but

should depend on  $B_0$ , where

$$B_0 = \left(\frac{1}{3}\right)(C_{11} + 2C_{12}).$$

The conclusions drawn by Tripathi *et al.*<sup>1</sup> are nothing new but are a mere repetition of the author's observations.<sup>2</sup>

<sup>1</sup>N.D. Tripathi, Kiran Shanker, and R.P. Khare, *J. Appl. Phys.* **49**, 4282 (1978).

<sup>2</sup>R. Ramji Rao, *Phys. Lett. A* **48**, 423 (1974).

<sup>3</sup>R. Ramji Rao, *Phys. Rev. B* **10**, 4173 (1974).

<sup>4</sup>R. Ramji Rao, *Physica (Utrecht)* **77**, 126 (1974).

<sup>5</sup>R. Ramji Rao and A. Ramanand, *J. Phys. Chem. Solids* **39**, 145 (1978); *Semicond. Insul. (GB)* **3**, 19 (1977).

<sup>6</sup>R. Ramji Rao, *J. Phys. Soc. Jpn.* **38**, 1080 (1975).

<sup>7</sup>J.A. Bains, Jr. and M.A. Breazeale, *Phys. Rev. B* **13**, 3623 (1976).