

Erratum: Raman spectra of shocked diamond single crystals [Phys. Rev. B. 66, 014107 (2002)]

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(Received 17 March 2009; published 11 May 2009)

DOI: [10.1103/PhysRevB.79.179901](https://doi.org/10.1103/PhysRevB.79.179901) PACS number(s): 34.20.Cf, 61.66.Bi, 62.20.D-, 62.50.-p, 99.10.Cd

A selection of Raman measurements on shocked diamond single crystals reported in our paper were repeated as part of an ongoing study on shock compression of diamond.¹ In repeating the previous measurements, a systematic error was discovered in the spectrometer calibration procedure used in our paper. Here, we report on the correction to this systematic error.

The frequency shifts reported in our paper for both [110] and [100] compression can be corrected using:

$$\Delta\omega_C = \frac{10^7}{514.5 \text{ nm}} - 1332.5 \text{ cm}^{-1} - \frac{10^7}{(514.5 \text{ nm})^2 \Delta\omega_R + 552.369 \text{ nm}},$$

where $\Delta\omega_C$ is the corrected frequency shift in cm^{-1} and $\Delta\omega_R$ is the originally reported frequency shift in cm^{-1} .

TABLE I. Mean anharmonicity constants, $\{pqr\}$.

	p/ω_R^2	q/ω_R^2	r/ω_R^2
Corrected mean values for uniaxial strain along [110]	-2.55 ± 0.21	-1.70 ± 0.11	-1.96 ± 0.07
Uniaxial stress study of Grimsditch <i>et al.</i> ²	-2.81 ± 0.19	-1.77 ± 0.16	-1.9 ± 0.2

The average values of the anharmonicity constants, $\{pqr\}$, obtained from the corrected frequency shifts for shock wave uniaxial strain along [110] are presented in Table I, along with the values from the uniaxial stress study by Grimsditch *et al.*² After the calibration correction reported here, the $\{pqr\}$ values determined from the shock wave results (up to 45 GPa in our article) are closer to the uniaxial stress results (<1 GPa).²

Below, we have replotted Fig. 1 from our paper using the corrected values for the Raman shifts and the new $\{pqr\}$ values.

The Raman shift corrections and the revised values of the anharmonic parameters $\{pqr\}$ in no way alter our paper's overall conclusions regarding the reduction in symmetry due to uniaxial strain and the complete removal of phonon degeneracy along [110]. However the correct $\{pqr\}$ values reported here modify the amount of degeneracy splitting or shift as a function of compression.

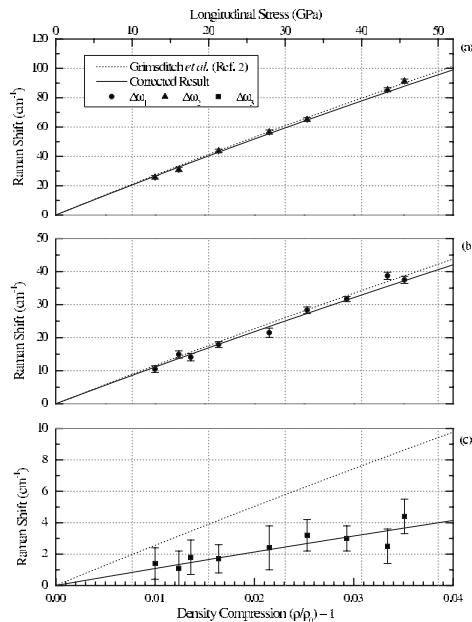


FIG. 1. Observed frequency shifts versus density compression for: (a) $\Delta\omega_2$, (b) $\Delta\omega_1$, and (c) $\Delta\omega_3$. Solid and dotted lines represent best fit from $\{pqr\}$ values for the corrected results, and that of Grimsditch *et al.*² respectively.

The authors would like to gratefully acknowledge and thank John M. Lang, Jr. for discovering the error in the calibration procedure, for deriving the correction function presented here, and using the corrected frequency shifts to evaluate the anharmonicity constants in Table I.

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¹J. M. Lang, Jr. and Y. M. Gupta (unpublished).

²M. H. Grimsditch, E. Anastassakis, and M. Cardona, Phys. Rev. B **18**, 901 (1978).