where B is taken to be the average of B(Cl) and B(Cs) and m is the average atomic weight of cesium and chlorine (Lonsdale, 1948), yields a value of 151 °K for the Debye temperature of cesium chloride. A Debye temperature of 166 °K has been calculated from the elastic constants assuming a nearest-neighbor interaction (Liebfried, 1955). The discrepancy between the two values is connected with the general relation $\Theta(X\text{-ray})/\Theta_D$ (elastic) < 1, due to the existence of low-frequency peaks in the vibrational spectrum (Blackman, 1956).

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Note on anomalous dispersion and Evans's X-ray study of tetragonal barium titanate.*

By HOWARD T. EVANS, JR., *U.S. Geological Survey, Washington, D.C., U.S.A.*

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Recently Chandrasekaran & Mohanlal (1965) have commented on the rather large effects of anomalous dispersion to be expected in violation of Friedel's law, which were not considered in my study (Evans, 1961) of the crystal structure of tetragonal barium titanate. The authors were kind enough to send me a preprint of their article and I was able to check their predictions against my original data. I measured with the Geiger counter all four equivalent reflections $h0l$, $\bar{h}0l$, $h0\bar{l}$, and $\bar{h}0\bar{l}$. Unfortunately, I could find no variations in these measurements that would in any way correspond to those predicted by Chandrasekaran & Mohanlal. The explanation for this lack of observed effect probably lies in antiparallel twinning in the specimen that I used. If such twinning is present, although it is safe to assume that there will be little or no diffraction coherence between twin domains, the intensity variations between $+l$ and $-l$ will, of course, tend to average out.

The common presence of antiparallel twinning on (001), though difficult to demonstrate, has been revealed, among others, by Hooton & Merz (1955) using etching techniques, by Pearson & Feldman (1959) using powder-dusting techniques, and by Miller & Savage (1959) using optical strain techniques. Recently, Niizeki & Hasegawa (1965) have used the difference in intensity between the 003 and 00$\bar{3}$ reflections in Cr $K\alpha$ radiation in applying the Lang topographic technique to reveal the antiparallel twin domains in tetragonal barium titanate. Incidentally, their measurements of intensity variations resulting from anomalous dispersion in the 001, 002 and 003 reflections in Cr $K\alpha$ radiation are not in accord with the structure model proposed by Frazer, Danner & Pepinsky (1955), but do support (although they do not prove) that offered by Megaw (1962) based on Evans's study.

An intensive investigation of the anomalous dispersion effect in barium titanate crystals polarized in an electric field could go a long way to overcome the indeterminacy of the structure resulting from the instability of the structure factor functions (Evans, 1961), which has so far prevented a proper refinement of this structure. Unfortunately, I will not be able to carry out any further such studies on barium titanate.

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