



FIG. 2. Relative optical density vs. temperature showing NaCl to zincblende phase transformation.

they able to measure the absorption edge beyond the transition. We experienced the same difficulty with our thicker samples, and found that the loss of light was due to the NaCl phase being in a powder form. In some of the 6.0 mil samples, the edge was very broad. The short wavelength end of the edge would remain the same regardless of whether the samples were powdered or single crystal, but the long wavelength end of the edge would shift to longer wavelengths as the crystal progressed from a pure single crystal to a powder. Their edge was measured at an attenuation coefficient of  $64 \text{ cm}^{-1}$  so the reported edge would be shifted to a longer wavelength and thus the value of  $E_g$  would be low. The error of  $E_g$  determined at an attenuation coefficient of  $64 \text{ cm}^{-1}$  would be progressively worse as the absorption edge was broadened.

Samara and Giardini's determination of  $E_g = 1.3 \text{ eV}$  is based on the assumption that the crystal is in the intrinsic conductivity range ( $550\text{--}800^\circ\text{C}$ ) and that the mobility is constant. There is a question whether the crystal is really in the intrinsic region at this temperature. If it is not, the

measured value of  $E_g$  would be the activation energy of one of the donor levels and would be less than the true  $E_g$ . We feel that their value of  $E_g$  is not the fundamental band gap but of some deep trapping level.

The annealing temperature of the NaCl to zincblende phase is directly proportional to the amount of strain in the recovered samples, as would be expected. This is also in agreement with CORLL's work<sup>(3)</sup> in which the recovered NaCl structure was heavily strained and annealed at  $150^\circ$  or higher temperatures.

#### REFERENCES

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