

Now for Ge, an analogous plot is shown below.

We calculate the slope and band gap energy values in the manner outlined above. Let us take  $1/T_1 = 0.001$  and  $1/T_2 = 0.011$ ; their corresponding ln  $\eta$  values are ln  $\eta_1 = 55.56$  and ln  $\eta_2 = 14.80$ . Incorporating these values into the above expression leads to a slope of

Slope = 
$$\frac{55.56\dot{Z}\dot{Z}\,14.80}{0.001 - 0.011} = -4076$$

This slope leads to an  $E_g$  value of

$$E_g = -2k$$
 (Slope)  
=  $-2(8.62 \times 10^{-5} \text{ eV/K})(-4076) = 0.70 \text{ eV}$ 

This value is in good agreement with the 0.67 eV cited in Table 18.3.

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