

The basic concept of freezing-in statistical fluctuations appears sound and avoids the theoretical problems of nucleation, wherein growth of embryos is too slow to enable the transformation to proceed as observed. Since the weight of observations on athermal martensite suggests that nucleation occurs at lattice imperfections, this calculation should be repeated for the much more difficult problems of embryos formed about such sites. The simple modification to homogeneous nucleation described above suggests that such calculations will be in the right direction to bring about agreement between measurements and theory. Considerations are also required on the effects on the transformation of (1) strain in the lattice to accommodate the nuclei, (2) use of the hydrostatic Gibbs function in problems dealing with solids, and (3) use of bulk values of surface energy on small surfaces with large curvature. If these modifications can be accomplished, it may well turn out that the too rapid variation of dN/dG_{21} with G_{21} , shown in Table 5.2, vanishes and that a reasonable theoretical basis for the observations is produced.