Erratum: Calculation of critical layer thickness versus lattice mismatch for Ge_xSi_{1-x}/Si strained-layer heterostructures [Appl. Phys. Lett. 47, 322 (1985)]

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Erratum: Calculation of critical layer thickness versus lattice mismatch for Ge_xSi_{1-x}/Si strained-layer heterostructures [Appl. Phys. Lett. 47, 322 (1985)]

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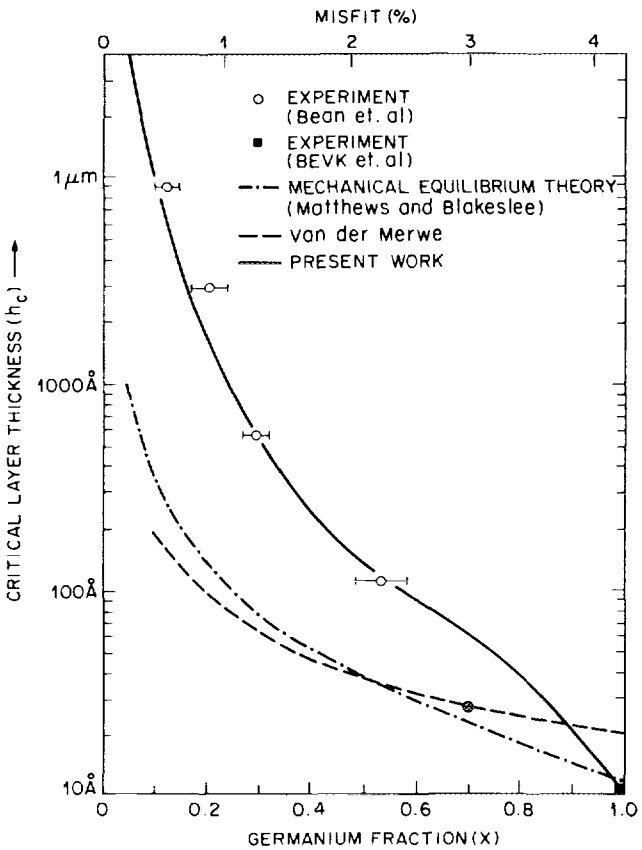

FIG. 1. Open circles are experimental single layer critical thickness results; solid square is the experimental result of Bevk *et al.* (see Ref. 3) for pure Ge on Si. Error bars taken from Ref. 4. Filled circle is a commensurate layer thickness for GeSi layer in a superlattice structure. Lower dashed curve—Van de Merwe (theory); middle dot-dashed—Matthews and Blakeslee (theory); solid—present result [Eq. (1)].

Two oversights are present in this phenomenological calculation of critical layer thickness. Firstly, the critical thickness relation of Matthews and Blakeslee[1,2] [Eq. (7)] is misplotted; the corrected plot is given by the middle dot-dashed curve in the present Fig. 1. Secondly, it was assumed that the effective interfacial width of an isolated dislocation lay somewhere within the estimated range of one and ten ⟨110⟩ atom spacings. In deriving Eq. (8) of our original work we assumed a median value of four atom spacings, i.e., four ⟨110⟩ atom spacings $\cong 2\sqrt{2}\langle a(x)\rangle$. The solid curve of our original work actually corresponds to five ⟨110⟩ atom spacings and is therefore a plot of

$$h_c \cong \left(\frac{1.9\times 10^{-2}\ \text{Å}}{f^2}\right)\ln\left(\frac{h_c}{4\ \text{Å}}\right), \tag{1}$$

which replaces Eq. (9b). These revisions are indicated in the attached figure. We thank B. Dodson and I. J. Fritz for their suggestions.

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