Annealing twins

During crystal growth a fault may occur in the sequence of crystal planes, leading to a twin boundary. This results in a twinned crystal, consisting of two individual crystals joined (at the boundary) in some definite mutual orientation. The lattice of one crystal is related to that of the other by some simple symmetry operation (rotation or reflection).

For example, during recrystallisation of cubic close-packed metals, random stacking faults cause the formation of annealing twins. The stacking sequence of {111} planes on one side of the twin interface is a mirror image of the stacking sequence on the other side of the interface, so the sequence across the interface is ...ABCABACBA... with the central B layer representing the coherent boundary between the twins.

The shape of twins is determined by the need to minimise interfacial energy, causing them to have straight edges in general.

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Contributed by DoITPoMS, Cambridge University

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