Lattice Aspects of Crystal Twinning

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Assume that the two individuals forming a twin are related by a mirror reflection parallel to a rational plane (*h k l*) or by a 180° rotation with axis parallel to a rational direction [*u v w*]. Mallard's criterion states that in both cases these elements can be complemented to a pair (*h k l*), [*u v w*] of rational elements, such that the angle between [*u v w*] and the normal to (*h k l*), called the obliquity ω, satisfies $\omega \leq 6°$ and that the twin index *n* is a positive integer not larger than 6 [1,2].

Discussing examples, especially of crystals with symmetries higher than orthorhombic, we shall show that this criterion is often satisfied for growth twins originating from a twinned nucleus. Growth twins formed by coalescence of two single crystals can better be described if stricter limits are imposed on ω and less strict ones on *n*. If (*h k l*) is interpreted as the habit plane K_1 of a mechanical twin and [*u v w*] as η_2, the observed values of the shear show that the restriction on ω has to be relaxed at least for $n = 1$ [3].

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