9.24: Twin lattice

A twin operation overlaps both the direct and reciprocal lattices of the individuals that form a twin; consequently, the nodes of the individual lattices are overlapped (restored) to some extent. The (sub)lattice that is formed by the (quasi)restored nodes is the *twin lattice*. In case of non-zero twin obliquity the twin lattice suffers a slight deviation at the composition surface.

Let $H^* = \cap_i H_i$ be the intersection group of the individuals in their respective orientations, $D(H^*)$ the holohedral supergroup (proper or trivial) of H^*, $D(\mathbf{L}_T)$ the point group of the twin lattice and $D(\mathbf{L}_{ind})$ the point group of the individual lattice. $D(\mathbf{L}_T)$ either coincides with $D(H^*)$ (case of zero twin obliquity) or is a proper supergroup of it (case of non-zero twin obliquity): it can be higher, equal or lower than $D(\mathbf{L}_{ind})$.

- When $D(\mathbf{L}_T) = D(\mathbf{L}_{ind})$ and the two lattices have the same orientation, twinning is by merohedry (twin index = 1). When at least some of the symmetry elements of $D(\mathbf{L}_T)$ are differently oriented from the corresponding ones of $D(\mathbf{L}_{ind})$, twinning is by reticular polyholohedry (twin index > 1, twin obliquity = 0) or reticular pseudopolyholohedry (twin index > 1, twin obliquity > 0).
- When $D(\mathbf{L}_T) \neq D(\mathbf{L}_{ind})$ twinning is by pseudomerohedry (twin index = 1, twin obliquity > 0),reticular merohedry (twin index > 1, twin obliquity = 0) or reticular pseudomerohedry (twin index > 1, twin obliquity > 0).