

1.43: Family structure

By superposing two or more identical copies of the same polytype translated by a superposition vector (*i.e.* a vector corresponding to a submultiple of a translation period) a fictitious structure is obtained, which is termed a *superposition structure*. Among the infinitely possible superposition structures, that structure having all the possible positions of each OD layers is termed a **family structure**: it exists only if the shifts between adjacent layers are rational, *i.e.* if they correspond to a submultiple of lattice translations.

The family structure is common to all polytypes of the same family. From a group-theoretical viewpoint, building the family structure corresponds to transforming (“completing”) all the local symmetry operations of a space groupoid into the global symmetry operations of a space-group.

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