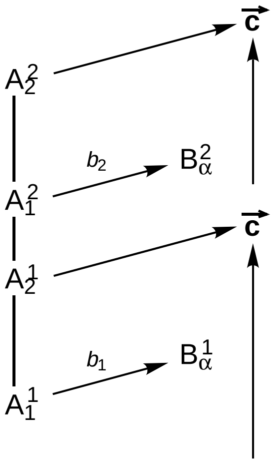
isomorphous structures (in polymers)

In the crystalline state, polymer chains are generally parallel to one another but neighbouring chains of equivalent conformation may differ in chirality and/or orientation.

Chains of identical *chirality* and *conformation* are isomorphous. Chains of opposite chirality but equivalent conformation are enantiomorphous. For example, two ...$TG^{+}TG^{+}TG^{+}$... helices of isotactic poly(propylene) are isomorphous. Isotactic poly(propylene) chains of the ...$TG^{+}TG^{+}TG^{+}$... and ...$G^{-}TG^{-}TG^{-}T$... types are mutually enantiomorphous.

With regard to orientation, consider a repeating side group originating at atom A_1^i, the first atom of the side group being B_α^i. For certain chain symmetries (helical, for instance) the bond vectors $\vec{\mathbf{b}}(A_1^i, B_\alpha^i)$ have the same components (positive or negative) $\vec{\mathbf{b}} \cdot \vec{\mathbf{c}} / |\vec{\mathbf{c}}|$ along the *c* axis for every *i*.



Two equivalent (isomorphous or enantiomorphous) chains in the crystal lattice, having identical components of the bond vectors along *c*, both positive or both negative, are designated isoclined; two equivalent chains having bond vectors along *c* of the same magnitude but opposite sign are designated anticlined.

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