

The Deformed Twinning of Clinopyroxenes in the Nonmafic High-Pressure Metamorphic Rocks

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Clinopyroxenes exist widely in high and ultra-high pressure metamorphic rocks and their retrometamorphic amphibolites. Their chemical compositions and crystal structures vary with the forming environment closely, so it's very meaningful to study the ultra-structures of the deformed metamorphic clinopyroxenes. Space group: $C2/c$; cell parameters: $a=0.939\text{nm}$, $b=0.856\text{nm}$, $c=0.522\text{nm}$; peak metamorphic conditions: $P=2.0\text{—}3.0\text{Gpa}$, $T\approx 800^\circ\text{C}$ (You, et al., 1996). The samples from nonmafic high-pressure metamorphic rocks in Dabie Mountains, China, have been observed and investigated by transmission electron microscopy (TEM). Two microtwins have been found as polysynthetic twins with the size of about $1\text{—}5\mu\text{m}$. The analyses of the selected area electron diffraction (SAED) patterns and TEM bright field images are as following:

The first deformed twin is rotation twin with twin plane $(1\ \bar{1}0)$ and twin axis $[1\ \bar{1}0]$ along crystal zone $[110]$. The second deformed twin is rotation twin with twin plane (200) and twin axis $[100]$ along crystal zone $[010]$. The articles on these two deformed twins haven't been seen.

These deformed twins were formed under natural geologic environment, so the samples must have been influenced by the strong paleogeologic stress, perhaps have undergone high-pressure and fast deformation.

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