The newly found staurolite-bearing garnet amphibolites in the Nyingchi complex of the Lhasa Block have the mineral assemblage of garnet, amphibole, staurolite, chlorite, plagioclase, mica and minor ilmenite and apatite. The cores of the garnet in the garnet amphibolite are extremely rich in Mn ($X_{\text{Sp}}=0.12\sim0.15$) and poor in Fe ($X_{\text{Al}}=0.45\sim0.50$), whereas rims of them are relatively Mn poor ($X_{\text{Sp}}=0.01\sim0.03$) and Fe rich ($X_{\text{Al}}=0.60\sim0.65$), showing that the core and the rim of the garnets belongs to two metamorphic generations. The $X_{\text{py}}$ increases and $X_{\text{gr}}$ decrease from the garnet core to the rim, indicating prograde metamorphic zonation characteristics growth. The amphibole grew in different metamorphic stages have obvious composition differences. Staurolite, as an uncommon aluminium-rich mineral in the metabasite, has also recorded different metamorphic processes in their microstructures, in combination with the garnet compositional profile, make it possible to calculate the P-T evolution by phase diagram calculations. We have modeled the pseudosection of the staurolite-bearing garnet amphibolite under the model system of Mn-NCKMAHSO, using Perple-X program. With the help of $X_{\text{py}}$ and $X_{\text{gr}}$ isopleths of the garnet, the peak metamorphic condition has been make out at 620ºC and 12kbar. The peak mineral assemblages are garnet, amphibole, staurolite and mica. In the meanwhile, the clockwise P−T path has also been demonstrated by the microstructures in the staurolites, suggesting that the staurolite-bearing garnet amphibolites have experienced three stages of metamorphism.

![Figure 1: The P–T pseudosection and metamorphic P-T path of the staurolite-bearing garnet amphibolites.](image-url)