

**Mantle heterogeneity as evidenced by
Raobazhai peridotite, north
Dabieshan, China**

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The peridotite bodies occurred near Raobazhai, in north Dabieshan trends northwestwards extending more than 10Km. The peridotite body consists mainly of harzburgite and dunite, with a few lherzulite mostly amphibolized due to amphibolite facies metamorphism. All of them are highly serpentinized. Major mineral paragenesis of the peridotites are Ol+Opx+Spl and Ol+Spl. The peridotite bodies are highly deformed and are mylonitized. REE distribution pattern and trace element geochemistry evidenced the chemical heterogeneity of these mantle-derived rocks.

There are a number of garnet pyroxenite enclaves scattered within the peridotite body as small pods, decimeters in size, enclosed in the serpentinized peridotites. Major mineral components of the garnet pyroxenite are: garnet (Prp₂₅₋₃₅), sodium augite(Jd₁₀₋₂₅) with a small amount of ilmenite. There are two stages of retro- metamorphism: the retrogressive granulite facies superimposed by amphibolite facies. On the basis of garnet-clinopyroxene geothermometry $Kd=4.06-5.28$; $T=793-919^{\circ}\text{C}$, $P=1.5$ Gpa are estimated for the garnet pyroxenite.

It is inferred that the peridotites are mantle rocks about 60Km in depth. During the exhumation of the orogenic belt it was tectonically emplaced into the lower crust in solid state and then uplifted to shallow depth. The REE distribution pattern and the Ni-Co-Sc diagram reveal that they are chemically equivalent respectively to the basaltic melt and ultramafic residua. Incomplete removing of mantle melting products from source area could be a possible mechanism for the mantle heterogeneity.