

On mineralizing process of podiform chromite deposit

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The podiform chromite deposits hosted in mantle peridotites belong to two different series of ophiolite. High-Cr type of chromite deposit belongs to PPG series, but high-Al type to PTG series. Studies of the authors revealed that the two types of podiform chromite deposit are also produced by varying degree of partial melting and reconstitution of primary pyrolite. This view has already been conformed by the melting experiment of lherzolite inclusion performed by Jin Zhenmin.

There are two factors controlling the mineralizing process of podiform chromite deposit. One is the degree and type of partial melting, while the other is the plastic flow intensity of mantle peridotite. The former serves as the prerequisite of mineralization and the latter as essential condition.

Chrome-bearing rock bodies with high melting dunite–Opx-poor harzburgite complex belt are favourable for mineralization. Chrome-bearing rock bodies are grouped into three types: (1) prograde melting type, (2) retrograde melting type and (3) multiple melting type. The authors indicate that the prograde melting type is most favourable for the formation of podiform chromite deposit.

The studies on ultramicrostructure reveal that the chrome-bearing rock bodies with high strain parameter (paleo differential stress and rate of deformation) and higher deformation intensity indicated by high dislocation density, high-density subgrain, dislocation array etc. contain large–medium scale chromite deposits.