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Two type of ultarabasic melts - alkaline picrite and meimechite. Was there a united general magma?

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The most interesting ultrabasic volcanic lavas in Maimecha Kotuj alkaline province province (South Taimur peninsula) are alkaline picrites and meimechites. These volcanites are extremely enriched in MgO (up to 32wt%) and consist of olivine phenocrysts and dark fine-grain groundmass, sometimes having similar nature of the komatiite spinifex-texture.

Many authors believed that all series of ultrabasic lavas were formed from one primitive melt by fractionation of olivine crystals, or adding Ol xenocrysts into the liquid. This view supported the model of the one-stage large grade melting of the mantle.

We can test the hypotheses by our materials (composition of the series meimechites and picrites groundmass and olivine and chromite phenocrysts).

Points composition of groundmass and rock connected demonstrate the fractionation from picritic and meimechitic melts olivine. The main difference consist from the CaO, Al2O3 MgO ratio. And alkaline contents Na2O and K2O. We offer for explain this difference the mechanism of mixing primary meimechite liquids with carbonatic fluid-melt component. These special alkaline melt can bring CaO, Na2O, K2O, TiO2 in deep mantle regions and mixing with meimechites melts from the local picrite's generation region.

These trends break down into two different fields in the plane Ln-Ab-Fo from the Ln-Fo-Ne-Q system. We would assume that the fields lie on different sides of the thermal barrier. The boundary may be regarded as Di-Ab cotectic projection on the plane Fo-Ak-Ab. We drew to the same conclusion when building the least-square calculation model of the relation between meimechite and picrite.

This scheme is supported by overflow of the temperature of Ol equilibrium in the picritic and meimechitic melts. Temperature was determined by several Ol/Liq geothermometers (Ariskin, Leeman, Toplis et other researchers using Ol- melt equilibrium reaction) by the Mg, Fe, Ca, Mn and Cr content.

It follows from these results that the one-stage model of mantle melting is not valid in this case. We can assume simultaneous and parallel process of mantle melting with the resulting formation of a set of picrite and meimechites dykes. The additional evidence of the chief role of the meimechite melt is the great field of the meimechites lavas and tuffs which exposed on the left board of the Maimecha rever. The picrites lavas practically is absent.