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汉诺坝捕虏体辉石岩和麻粒岩的成因探讨

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摘要:

汉诺坝新生代玄武岩中含有丰富的地幔和地壳岩石捕虏体,其中捕虏体辉石岩和麻粒岩由于外观上具有一定的相似性,两者容易混淆,导致研究上的误区。本文以辉石岩和麻粒岩捕虏体作为研究对象,通过岩相学观察结合矿物主量元素分析、单斜辉石微量元素和Sr-Nd同位素分析,对两种捕虏体进行深入的研究和对比以探讨其成因意义。结果表明,上述各方面二者都存在明显的差别,捕虏体麻粒岩具有层状堆晶构造,两种辉石矿物(次透辉石和古铜辉石)相对贫MgO富FeO,单斜辉石的REE相对富集,以高 $^{87}\text{Sr}/^{86}\text{Sr}$ 、低 $^{143}\text{Nd}/^{144}\text{Nd}$ 为特征;而捕虏体辉石岩一般呈块状构造,两种辉石矿物(透辉石和古铜辉石-顽火辉石)相对富MgO贫FeO,单斜辉石REE总量极低呈亏损模式,同位素组成上介于捕虏体橄榄岩和麻粒岩之间。捕虏体麻粒岩特征表明它是幔源岩浆底侵作用形成,岩浆受到了下地壳的混染;而捕虏体辉石岩明显不同于橄榄岩和麻粒岩的成因,来自于富集地幔。

英文摘要:

The Cenozoic basalts from Hannuoba contain abundant xenoliths derived from mantle and crust. As pyroxenite and granulite xenoliths appear very similar by naked eye sometimes, it is easy to confound the two kinds of rocks. Here we present our research on the genesis of pyroxenite and granulite xenoliths through petrographical observation, mineral chemistry and trace element and Sr-Nd isotopic compositions of clinopyroxene. The results indicate that the two kinds of xenoliths are remarkably different. Granulite xenoliths have layered cumulate structure and both kinds of pyroxenes (salite and bronzite) are relatively rich in FeO and poor in MgO. Clinopyroxene in granulite xenolith is relatively enriched in REE and characterized by high  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios and low  $^{143}\text{Nd}/^{144}\text{Nd}$  ratios. In contrast, pyroxenite xenoliths generally show massive structure. Diopside and bronzite-enstatite of the pyroxenite xenoliths are relatively rich in MgO and poor in FeO. Clinopyroxene in pyroxenite xenolith shows very low REE content and a REE-depleted pattern. Isotopic compositions of pyroxenite xenoliths are between those of peridotite and granulite xenoliths. The above features as a whole suggest that granulite xenoliths result from magma underplating, which was subjected to lower crustal contamination. However, the pyroxenite xenoliths, distinguished from peridotite and granulite xenoliths, are derived from enriched mantle.

关键词: [捕虏体](#) [辉石岩](#) [麻粒岩](#) [成因意义](#) [汉诺坝](#)

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