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内蒙古阿巴嘎地幔岩捕虏体与岩石圈地幔性质探讨

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摘要:

阿巴嘎地区新生代地幔捕虏体岩性主要为尖晶石二辉橄榄岩,矿物组成有橄榄石(Fo_{89-91})、单斜辉石($\text{Wo}_{43-49}\text{En}_{44-49}\text{Fs}_{3-11}$)、斜方辉石($\text{Wo}_{0.7-2.2}\text{En}_{88-91}\text{Fs}_{8-11}$)和铬尖晶石($\text{Cr}^{\#}_{6-20}$)。橄榄岩结构以碎斑结构为主,除此还可见海绵边结构、重结晶结构、粗粒结构和变晶结构,部分橄榄石发育膝折带和伊丁石化现象,这些特征暗示该区地幔经历了较强烈的熔体-岩石圈相互作用和复杂的演化过程。大地构造位置上,阿巴嘎与大兴安岭哈拉哈河-绰尔河及五大连池-科洛同处在兴蒙造山带上,但阿巴嘎表现出与华北克拉通西部北缘相似的热状态及饱满型-过渡型的岩石圈地幔性质,区别于大兴安岭中部具有古老残留的岩石圈地幔,暗示着兴蒙造山带之下的岩石圈地幔存在时空上的不均一性。而这种大尺度岩石圈地幔的不均一性可能与软流圈-岩石圈相互作用程度、上地幔复杂的地质演化及兴蒙造山带内部不同块体的活动强度、时间等性质有关。

英文摘要:

Mantle peridotite xenoliths from Abaga area, Inner Mongolia, predominantly contain spinel lherzolites, which consist of olivine(Fo_{89-91}), clinopyroxene($\text{Wo}_{43-49}\text{En}_{44-49}\text{Fs}_{3-11}$), orthopyroxene($\text{Wo}_{0.7-2.2}\text{En}_{88-91}\text{Fs}_{8-11}$) and spinel($\text{Cr}^{\#}_{6-20}$). Most peridotites exhibit porphyroclastic texture, in addition, there are edged sponge texture, mosaic granoblastic texture, coarse texture and cataclastic texture. Kink bands and iddingsitization are common in olivine. These characteristics suggest that the history of the upper mantle underneath Abaga area is complex and experiences strong melt-lithosphere interaction. Tectonically, both Abaga area and the central Great Xing'an Range lie on the Xing'an-Mongolia Orogen Belt; however, the former has the nature of medium-low temperature thermal state and the fertile-transition lithospheric mantle, which is similar to the northern margin of North China Craton but distinguished from the central Great Xing'an Range that has a great amount of aged lithospheric mantle. This difference indicates that the lithospheric mantle underneath the Xing'an-Mongolia Orogenic Belt may be heterogeneous in time and space. The diverse degree of asthenosphere-lithosphere interactions, the complex of upper mantle geological evolution, besides, blocks form the Xing'an-Mongolia Orogenic Belt have distinct nature of activity time, intensity, etc, all this lead to a large scale heterogeneous of the lithospheric mantle.

关键词: [地幔橄榄岩](#) [阿巴嘎](#) [兴蒙造山带](#) [岩石圈地幔演化](#)

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