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山东沂水杂岩岩石化学及锆石Hf同位素研究

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摘要:

山东沂水杂岩主要由高角闪岩相至麻粒岩相变质的变基性岩和(紫苏)花岗岩岩体组成. 本文主要研究了三个含紫苏辉石的黑云斜长角闪岩(YS06-19、YS06-41和YS06-29), 三个含石榴子石的角闪二辉斜长麻粒岩(YS06-40、YS06-45、YS06-49), 一个含尖晶石和石榴子石角闪二辉麻粒岩(YS06-31)和两个英灵山花岗片麻岩样品(YS06-30和YS06-48)的岩石化学和锆石Hf同位素特征. 结果认为, (1)含紫苏辉石的黑云斜长角闪岩和含石榴子石的角闪二辉斜长麻粒岩对Sr、K、Rb、Ba、Ce、Th等大离子亲石元素和轻稀土元素的富集程度不同, 指示了其原岩经历了不同程度的部分熔融; (2)认为英灵山花岗片麻岩是由来自于亏损地幔的基性岩部分熔融产生, 这一观点同沈其韩等(2000)认识一致; (3)所研究的变基性岩的锆石Hf亏损地幔模式年龄均小于英灵山花岗片麻岩Hf亏损地幔模式年龄, 指示了该变基性岩可能不是英灵山花岗片麻岩的母岩, 沂水地区应该存在更古老的变基性岩石, 也可能反映了这两类岩石对Hf同位素体系的保存能力不同; (4)该地区地壳生长在30亿年左右启动, 大规模的地壳生长出现在2530~2740Ma.

英文摘要:

Yishui Complex in Shandong Province is mainly composed of meta-basic rocks with high amphibolite facies to granulite facies metamorphism and (hypersthene-bearing) granite bodies. In this article, the authors researched the petrochemical and hafnium isotopic characters of zircons of four kinds of rocks including hypersthene-bearing biotite plagioclite amphibolites, garnet-bearing hornblende two-pyroxene plagioclase granulites, spinel and garnet-bearing hornblende two-pyroxene granulites and Yinglingshan granite-gneiss. The research results are as follows: (1) Hypersthene-bearing biotite plagioclite amphibolites and garnet-bearing hornblende two-pyroxene plagioclase granulites have different enrichment of Sr, K, Rb, Ba, Ce, Th and light rare earth elements, these indicate that their primary rocks experienced different degree of partial melting; (2) Yinglingshan granite-gneiss was formed by partial melting of meta-basic rocks came from the depleted mantle; (3) All the depleted mantle model ages of Hf of the studied meta-basic rocks are younger than the Yinglingshan granite-gneiss, it may show that the studied meta-basic rocks are not the primary rocks of Yinglingshan granite-gneiss and older meta-basic rocks must be exist in Yishui Complex. Or show that their capacity in conserving hafnium isotopic system are different; (4) Consulting ages from other published literatures, the authors consider that the crustal growth of Yishui area was started at about 3000Ma years ago and large scale of growth was during 2530~2740Ma.

关键词: [沂水杂岩](#) [变基性岩](#) [岩石化学](#) [锆石](#) [Hf同位素](#)

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