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南秦岭勉略带铧厂沟火山岩锆石U-Pb年代学及地球化学研究

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摘要：

陕西省西南部铧厂沟火山岩以英安岩为主(~90vol%),夹玄武岩构造透镜体(~10vol%)。玄武岩SiO_2含量为43.6%~54.7%,具有低K、Ti,高Na、Mg的特征;稀土总量为24×10^{-6}~29×10^{-6},中稀土轻微富集,Eu、Sr轻微正异常;具有正Rb、Ba异常及负Nb、Zr异常,LaYb_N值为1.81~2.87,Th/Yb值为0.19~0.23,Th/Nb值为0.11~0.20,Nb/La值为0.26~0.70,Hf/Th值为0.50~0.67,显示亚碱性弧玄武的特征。英安岩SiO_2含量为59.5%~72.3%,稀土总量较低(116×10^{-6}~187×10^{-6}),为右倾式配分模式,Eu负异常,富集大离子亲石元素(如Rb、Ba、Th、K等),亏损高场强元素(如Nb、P、Ti、Ta等),显示弧火山岩地球化学特征。获得玄武岩的锆石SHRIMP U-Pb年龄为801±4.7Ma (MSWD=1.18;n=12),英安岩的锆石LA-ICP-MS U-Pb年龄为802.1±5.3Ma (MSWD=1.02;n=19),二者在误差范围内一致因此,铧厂沟火山岩是一套火山弧环境的亚碱性玄武质-英安质火山岩组合,表明新元古代曾有大洋板块向南俯冲到扬子古板块北缘之下;这套山岩裹挟于泥盆系沉积地层中,与泥盆系地层一起,共同组成了一套由晚古生代-三叠纪勉略洋闭合所致的构造混杂岩带。

英文摘要：

The Huachanggou volcanic rocks in Southwest Shaanxi are mainly dacite (~90vol%) structurally interlayered wit basalt tectonic lenses (~10vol%). The basalts have SiO_2 contents of 43.6%~54.7%, characterized by low contents K and Ti, and high contents of Na and Mg. Their REE concentrations range 24×10^{-6}~29×10^{-6} with slightly enriched REE and MREE, and slightly positive Eu and Sr anomalies. They show positive Rb and Ba anomalies and negative Nb nd Zr anomalies, and yield $(La/Yb)_N$, Th/Yb, Th/Nb, Nb/La and Hf/Th ratios of 1.81~2.87, 0.19~0.23, 0.11~0.2, 0.26~0.7 and 0.50~0.67, respectively, resembling the characteristics of sub-alkaline arc basalts. The dacites have SiO_2 co ents of 59.5%~72.3%, REE concentrations of 116×10^{-6}~187×10^{-6} and negative Eu anomalies, and are rich in LILE (e.g. Rb, Ba, Th and K), but depleted in HFSE (e.g. Nb, P, Ti and Ta), similar to the volcanic rocks developed in volcar arcs. The basalt sample yields zircon SHRIMP U-Pb age of 801.7±4.7Ma (MSWD=1.18; n=12); which is same to the con LA-ICP-MS U-Pb age of 802.1±5.3Ma (MSWD=1.02; n=19) obtained from the dacite. Hence, the volcanic rocks a Huachanggou area constitute a sub-alkaline basalt-to-dacite suite which suggests that there existed a southward bduction of an oceanic plate beneath the Yangtze craton in Neoproterozoic; and the Devonian sedimentary strata, gether with their structurally sandwiched slices of the Neoproterozic volcanic rocks, form a tectonic mélange resulte rom Late Paleozoic-Triassic suturing of the Mian-Lue Ocean.

关键词：勉略缝合带 弧火山岩 锆石U-Pb年代学 地球化学 新元古代

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