西藏冈底斯带那曲地区中生代火山岩的LA-ICP-MS锆石U-Pb年龄和地质意义

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中文摘要:大规模的早白垩世火山岩呈孤岛状广泛展布于冈底斯北部地区。1: 25万区域地质调查在那曲地区圈定出晚白垩世、中-晚侏罗世火山岩。在充分研究前人资料的基础上，对出露状况较好的那曲县城晚白垩世火山岩、哈尔麦中-晚侏罗世火山岩进行了野外调研，它们均为安山质火山岩系，均与一套黑色砂板岩呈角度不整合接触，同时对其进行了LA-ICP-MS锆石U-Pb定年，便于进行区域对比。那曲地区的中生代火山岩多数锆石具有生长环带，部分锆石显示核边结构。采自那曲东县城、哈尔麦的2件安山岩样品的年龄分别为116.3±1.4 Ma、111.37±0.73 Ma，它们的形成时代基本一致，应该为同一地质事件的产物。区域对比表明，早白垩世火山作用是北冈底斯带最为强烈的一次火山活动，其活动时间大致在110 Ma左右，之后是早白垩世岛弧型深成中酸性侵入活动。冈底斯北带早白垩世火山作用究竟与狮泉河-嘉黎大洋俯冲有关，还是与班公湖-怒江洋壳俯冲有关，目前尚难定论。

中文关键词:锆石U-Pb年龄 早白垩世火山岩 那曲地区 西藏冈底斯

Zircon LA-ICP-MS U-Pb Ages of the Mesozoic Volcanic Rocks in Nagqu Area of Gangdise in Tibet and Their Geological Significance

Abstract:Island-like early Cretaceous volcanic rocks are extensively distributed in northern Gangdise, Tibet. Regional geological survey at the scale of 1:250000 has mapped the late Cretaceous and middle-late Jurassic volcanic rocks in Nagqu area. Based on geological data available, the authors investigated the late Cretaceous and the middle-late Jurassic volcanic rocks which are well exposed respectively in Nagqu County town and Haermai Village. They both are andesitic volcanic rocks and exhibit angular unconformity with the underlying bed composed of black sandy slate. Meanwhile, they were sampled to perform zircon U-Pb dating by using the LA-ICP-MS system at the State Key Laboratory of Geological Processes and Mineral Resources in Wuhan for regional comparison. Most zircons separated from these volcanic rocks exhibit striped absorption and obvious oscillatory zoning, with a few ones showing the core-rim structure. The ages of two andesite samples collected respectively from eastern Nagqu and Haermai are 116.3±1.4 Ma and 111.37±0.73 Ma, suggesting that the volcanic rocks were formed basically at the same time. Regional comparison shows that early Cretaceous volcanism might have been the strongest one in northern Gangdise, with its activation time being 110 Ma or so, and the strong emplacement of early Cretaceous island-arc granitoids took place subsequently. The problem whether the early Cretaceous volcanism resulted from Shiquanhe-Lhari ocean subduction or from Bangong Co-Nujiang ocean subduction requires further study for final conclusion.

keywords:zircon U-Pb age; early Cretaceous volcanic rocks; Nagqu area; Gangdise Tibet