Jurassic detrital zircons from Asenitsa metasedimentary rocks, Central Rhodope massif, Bulgaria

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Detrital accessory minerals in metasediments are useful tool to determine the time of sedimentation and provenance of the sediment material. Asenitsa lithotectonic unit [1] occupies the highest level of the Central Rhodope metamorphic terrain (Bulgaria) and comprises metaigneous and metasedimentary rocks. Metasediments overlie the gneissic suits and are composed of mica schist, calc-schists, amphibolites and marbles.

We report LA-ICP-MS geochronological data on detrital zircons from metasediments (garnet-staurolite mica schist and epidote schist). The studied grains are euhedral and on CL images display clearly igneous patterns. Zircons in the mica schist show more complex zoning, with bright cores, wide oscillatory zone and outermost dark envelopes. A concordia age of 164.4 ± 1.3 Ma (MSWD = 2.1, Th/U 0.11–0.30, 5% filter) was calculated from 9 spots for the outermost dark rims of the zircons. A few grains have inherited Palaeozoic cores (252–311 Ma), while others have cores and oscillatory zones that yielded Middle Jurassic ages. The zircons from epidote schist have homogeneous cores and wide oscillatory rims. Both of these yielded concordant ages: 145.9 ± 1.3 Ma (MSWD = 1.1, Th/U 0.11–0.48, 7 analyses, 5% filter) for the cores, and 143.7 ± 1.1 Ma (MSWD = 1.5, Th/U 0.30–0.51, 10 analyses, 5% filter) for the rims.

The possible sources of detrital zircons are metaigneous Jurassic rocks of the Rhodope massif. Similar protolith age was reported from the gneissic part of Asenitsa unit (153.5 ± 4.1 Ma) [2]. The sediment deposition may have started in Late Jurassic to Early Cretaceous.

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[1] Sarov (2012) *Earth and Man Nat. Museum, Sp. Publ.*, 43-47. [2] von Quadt *et al*. (2006) *Rev Bulg Geol Soc, Geosciences*, 225-228.