some of the microfossils, indicating that they are fossilized fungi; a fungal interpretation is further supported by microfossil morphology. Smaller, often twisted filamentous microfossils with a simpler morphology in which chitin was not detected probably represent fossilized prokaryotes and, if so, prokaryotes and eukaryotes co-existed in the geothermal system of Vani. Fluid inclusion microthermometry shows that microfossils were trapped at temperatures of ~100°C in boiling water, probably evolved seawater. Preservation of microfossils occurred at shallow sub-marine conditions of <10 m depth. Our results show that fluid inclusions may contain valuable palaeobiological information and can be used both for establishing biogenicity but also for the reconstruction of the palaeoenvironment of fossilized microorganisms.

Structural and geochronological evidence for Palaeogene shearing in the Rhodope Mountains (SW Bulgaria)

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The basement rocks of the Rhodope Metamorphic Province (RMP) in SW Bulgaria and NE Greece belong to a synmetamorphic, eastern Mediterranean nappe stack with layers of continental crust and ophiolites. It has been assembled during a complex history in an Alpine active continental margin realm along the southwestern border of Moesia. During late and post-collisional stages, deeper levels of the nappe stack have been exhumed as metamorphic core complexes along low-angle detachment faults. The late stages of extension were associated with rift basin formation, volcanism, erosion and sedimentation.

On the basis of lithotectonic and palaeogeographic considerations the present-day structure of the RMP can be generally subdivided into a lower, middle and an upper tectonic level. Lower and middle levels are jointed along the top-to-the-SW Nestos shear zone, middle and upper levels probably along the top-to-the-NNW Borovica Shear Zone.

We combine structural, metamorphic and U-Pb zircon geochronological datasets in order to unravel the complex history of the RMP. U-Pb zircon geochronology by LA-SF-ICP-MS was carried out on samples from pegmatite veins and granitoid intrusions from the Rhodope Mountains in Bulgaria.

One study area is a broad profile in the Western Rhodopes. The section cuts the eastern part of the Neogene Struma Graben, the Palaeogene Mesta Graben, the basement of the southern Pirin and western Rhodope Mountains, intrusions therein and extension-related structures (e.g. Strymon Valley Detachment, Ribnovo Low-angle Normal Fault). In the basement, lower (Pangaion-Pirin Complex) and middle (Sidironero-Mesta Unit) levels of the nappe stack are exposed. The main shearing event within the two levels is top-to-the-SW and related to the activity of the Nestos Shear Zone. U-Pb zircon geochronology by LA-SF-ICP-MS was carried out on samples from three granitoid intrusions.

The undeformed and therefore post-tectonic Teshovo (South Pirin) Pluton intruded into the lower level and gives zircon crystallization ages of 32 ± 0.2 Ma. Both the Dolno Dryanovo and Spanchevo plutons intruded into the middle level and are syn-tectonic to the main foliation. Their single-phased magmatic zircons and magmatic rims yield ages of ca. 56 to 55 Ma, whereas inherited cores display ages of ca. 143 to 145 Ma. Variscan zircons, which are typical for basement rocks from the Pangaion-Pirin Complex, are not present in samples from the Spanchevo and Dolno Dryanovo plutons. These results indicate that at ca. 56 to 55 Ma the Sidironero-Mesta Unit was not yet placed upon the Pangaion-Pirin Complex. Therefore, the southwest directed thrusting of the middle level over the lower level took place between ca. 56 to 55 Ma and ca. 32 Ma.

The second study area is situated in the eastern part of the Central Rhodopes in Bulgaria. Rocks from the lower tectonic level (Arda Unit) are overlain by rocks from the

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middle tectonic level (Starcevo Unit) along the Starcevo Fault. More to the east the Starcevo Unit is juxtaposed to overlying rocks of the Borovica Unit along the Borovica Fault, which probably represents the border between the middle and the upper tectonic level.

U-Pb zircon geochronology was carried out on samples from deformed and undeformed pegmatite veins which were taken a) in the border area between the Arda and Starcevo units in the hanging-wall of the Starcevo Fault near Nedelino, and b) in the area of the Borovica Shear Zone at the western flank of the Pripek Granite along the road to the village Dolen east of Zlatograd. For a) preliminary results show a zircon crystallization age of around 36 Ma for an undeformed vein, for b) preliminary results show zircon crystallization ages of around 44 Ma for mylonitic veins and therefore suggest a Lutetian age for the activity of the Borovica Shear Zone.

We propose a model where the lower tectonic level of the RMP is Apulia-derived and where the present-day structure of the Rhodopes can be explained by a subduction polarity reversal from SW-dipping in the Jurassic and Early Cretaceous to NE-dipping in the Late Cretaceous and Palaeogene.

A petrologic examination and detailed mapping of the tectonic margin between the Jurassic Pindos-Vourinos ophiolite and metamorphic Triassic-Jurassic Pelagonian platform carbonates in West Macedonia, Greece

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At the end of this decade, the Ilariona hydroelectric dam will be completed in west Macedonia (Greece). The Aliakmon, the longest river in Greece, will be dammed and its valley will be flooded. Within the area to be flooded the Aliakmon has cut a valley deep into the contact zone between the mid Jurassic Pindos-Vourinos oceanic lithosphere complex and the Paleozoic-mid Jurassic continental Pelagonian margin. In order to preserve as much information as possible, the Aliakmon Legacy Project aims to gather geological data from the future flooded areas. In the framework of this project, a detailed geological map has been prepared and rock samples have been analyzed in the lab.

The Pindos-Vourinos Ophiolite is a spoon-shaped ophiolitic nappe that was obducted in Jurassic time. The Vourinos Ophiolite is located at the leading edge of the nappe whereas the Pindos Ophiolite is located at the trailing edge. According to the fracture pattern with a common dip of 40° to the SW, the mapped area can be located in a central position at the leading edge of the Pindos-Vourinos Ophiolite.

Various techniques have been used to analyze collected rock samples. In addition to petrographic and a reflected light microscope techniques, data has been acquired using electron microprobe analysis (EMPA). For the ophiolitic section, it could be shown that the degree of serpentinisation increases with proximity to the contact zone. Relicts of olivine and pyroxenes can be found together with chromite and magnetite. EMPA displays high content of oxygen, magnesium and silica for the peridotites. Furthermore, a relative accumulation of chromium relative to magnesium (10:1) can be found in the altered outer zones of chromite minerals compared to less altered inner zones (3:1). Towards the thrust sole, increasing shear strain causes tectonic brecciation (deformed host rock remnants in highly sheared matrix) as well as mylonitic occurrences of peridotite.

The Pelagonian carbonates of the Vounassa vary from microcrystalline over sugary-grained to granular crystalline rocks. Intermittently, brownish, reddish or white bands cut through the carbonates. Close to the shear zone, the carbonates have been metamorphosed to marble. Thin sections of the granular crystalline carbonates display angled crystals, partly with twin lamellae distorted by kink bands. The mylonitic marble contains larger-grained

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