

Mineralogy of the Pliocene Trachyte and its Carbonatitic Minette Inclusions in Ostrvica, F.Y.R. Macedonia

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The trachyte at Ostrvica hill (age 3.21 ± 0.10 Ma) in Vardar zone is the most evolved volcanics of the ultrapotassic Pliocene-Quaternary series in F.Y.R. Macedonia. It is aphyric, with clinopyroxene and phlogopite microphenocrysts within a sanidine-anorthoclase groundmass. It contains inclusions of carbonatitic minette ranging in size from several mm to 6–7 cm. They are light coloured porphyric rocks, rich in vacuoles, composed of phlogopite and completely altered olivine(?) phenocrysts amongst acicular clinopyroxenes within a feldspar–calcite groundmass with abundant Fe-oxides and acicular apatite microlites. The inclusions are rimmed by a mm thick mixing zone composed of the same minerals but with intermediate composition between that of minette and trachyte. The clinopyroxenes are mainly diopside-augite with low Ti and Al content (with 6Al only in the minette). Positive correlations are observed between Na and Fe³⁺, Al and Ti, and negative one – between Al and Si. In the inclusions phlogopites the negative correlation between Mg# and 4Al is found. The feldspars in the trachyte and minette inclusions are Ca-sanidine to Ca-anorthoclase, in the mixing zone – sanidine only. In the inclusions two plagioclase generations (An₄₁ and An₂₅) exist. The estimated crystallization temperature of the minette clinopyroxenes is 1280–1180°C, of plagioclase (An₄₁) – 1130°C and in the hosting trachyte – 1080°C, at the pressures 6.9 and 7.7 kbar, respectively. The temperature of the feldspars crystallization (K-Na-feldspars and Pl₂₄) in the minette groundmass is 809–878°C. By analogy with other ultrapotassic volcanics from F.Y.R Macedonia it is suggested, that the discussed volcanics originated from phlogopite-bearing metasomatised mantle.

Lom coal basin (NW Bulgaria) – preliminary data on palaeoecology and sedimentology

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Lom coal basin is located in NW Bulgaria in the west subsided part of the Lom depression. Lom basin is filled in with thick sedimentary succession of Neogene age, comprising alluvial sand, silt and clay, interbedded with coal seams, and covered by loess deposits of Quaternary age. Neogene deposits have been divided into two formal lithostratigraphic units – Archar Formation (pure sand of alluvial origin, Pontian age) and Brusartsi Formation (clay, silt and sand with coal beams in the lower part, Dacian-Early Romanian age). The previous studies of Lom basin sediments were focussed on coal characteristics and no detailed sedimentological studies were published. The diatom presence in clays from Brusartsi Fm is established for the first time during our study. The present study aims to characterize sediments of Brusartsi Formation and palaeoecology in the Lom basin based on data from sedimentological studies (include grain-size analysis, petrographic study of thin-sections under the polarizing microscope), and mineralogical studies of the fine sand fraction in immersion eugenol, and X-ray diffraction analysis, and diatom studies. Taxonomic structure studies were made using scanning electron microscope (SEM) Philips 515 at Freie