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 lithostratographic 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

Universität Berlin. Thus preliminary studies of sediments from 5 boreholes drilled during 2007-2008 and kindly provided by ENEMONA, were carried out.

Neogene sedimentary succession in the boreholes studied is represented by deposits of Brusartsi and Archar Formations. The full thickness of Brusartsi Fm. has been drilled and only the upper parts of the Archar Fm. Sediments drilled from Archar Formation are thick up to 10 m - light gray and almost white sand, very well sorted (mainly quartz and less feldspars, some epidote, garnet and sphene; rare ore minerals are present). Sediments from Brusartsi Formation are varying from 70 to 105 m in thickness. They are represented by thick 2-5 up to 22 m clays and silty clays, gray and gray-greenish in color, and with massive or laminated structure. Some of clays contain significant amount of diatoms up to 50% of the rock volume and in some samples 1 mm thick layers are extremely composed of diatoms. Main rock forming minerals are chlorite (clinochlore), smectite (montmorilonite), illite, quartz and feldspar according to data from X-Ray diffraction analysis. Clay particles are oriented parallel to sedimentation surface and their composition evidenced for chiefly detrite origin. Sand is medium to very well sorted, medium to coarse grained, light grey in colour. These sands show lower mineralogical and structural maturity compared to those from Archar Fm. Well sorted sand from Brusrtsi Formation is composed of relatively equal amounts of quarts, plagioclase and potassium feldspar, and very few grains of garnet, amphibole, sphene and epidote. Pyrite represents opaque minerals.

The diatom flora is freshwater one. The planktonic representatives of genus *Aulacoseira* Thw. have the highest abundance – and they compose the rockforming complex. On some levels there are periphytic (epiphytic) forms, belonged to genera *Fragilaria* Lyngbye *sensu lato*, *Tetracyclus* Ralfs, *Navicula* Bory *sensu lato*, *Cymbella* Ag. *sensu lato*, *Eunotia* Ehr., *Amphora* Ehr. The most abundant species is *Pinnularia nobilis* var. neogena (Grun.) Cl. It can be considered as biostratigraphic marker for Late Miocene-Pliocene age. Based on our SEM investigation on the frustules of *P. nobilis* var. neogena high stages of dissolution of the frustules were determined. Dissolution occurred progressively and centripetally, and the final stage was the corroded silica matrix of the central area.

The grain-size composition and mineralogy of clay minerals led to the conclusion that sedimentation occur in a relatively shallow broad basin with low hydrodynamics. Results from diatom analysis confirm this conclusion and indicate that the basin was eutrophic freshwater lake. The temperature regime was similar to the lakes of the moderate latitudes.

Geochemical characteristics of Upper Cretaceous volcanics in the north of Istanbul, Turkey: implication for the subduction zone magmatism

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The volcanic rocks Upper Cretaceous in age are exposed along the Black Sea coasts east-west trending in the northwest Turkey and Srednegorie zone through Bulgaria. The geological and geochemical data, petrographic and mineralogical findings have been presented respectively. The basement rocks in the north of Istanbul are represented by sedimentary rock groups Paleozoic and Triassic in age. The volcanic rocks Upper Cretaceous in age overlay the basement rocks disconformably. The basement rocks and volcanic sequence are covered by Neogene sediments disconformably. Volcanic rocks are dominated by andesite, basaltic andesite and associated with lesser proportion of basalt, dacite, rhyodacite, less olivine basalt and their volcaniclastic equivalents. The volcanic rocks in the region have been differentiated volcanic breccias, poorly sorted volcaniclastic deposits, massive lavas and volcanic originated sandstone considerig their lithological facial features and field characteristics. In some locations hyaloclastite type of rocks are common. Some of them are reworked in the marine environment. This is the evidence that the volcanism was formed as submarine volcanic activities. The volcanic units are cut by some basaltic and/or