kyanite) together with a K-rich melt. In the same samples, Cenozoic ages between 38 and 42 Ma were obtained in the outer rim of monazite grains located in the matrix. These monazites also preserve Mesozoic ages in the grain core. The Cenozoic ages relate to the tectonometamorphic event that led to widespread fluid-assisted partial melting in adjacent orthogneisses. During this event, because they represent a melt-depleted residue with respect to a previous higher grade melting event, the garnet-kyanite gneisses remained unfertile and preserved good petrological and geochronological record of the older event. Nevertheless, they also recorded the Cenozoic event in at least two ways, namely the growth of fibrolite at the expense of biotite, and the partial recrystallization of monazite grains located outside large porphyroblasts.

Finally, an interesting result of this study is the first documentation, in the Bulgarian Central Rhodopes, of a Late Jurassic-Early Cretaceous high-grade metamorphic event that is also known from the Greek part of the Rhodopes Mountains (e.g., in the hanging wall of the Nestos Shear Zone).

Correlation of the Triassic rocks in the Moesian platform (Bulgaria-Romania)

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The Moesian platform occupies a large area in Bulgaria and Romania. A lithostratigraphic division of the cross-section of the Triassic system is performed for both countries. The applied methodology in defining the lithostratigraphic units is based on the "International stratigraphic Guide" by Hedberg. Although the present work aims to unify positions and technical usage of the lithostratigraphic units the latter are rather different in Bulgaria and Romania, which makes difficult the cross correlation.

The Bulgarian part of the Moesian platform is examined according "Regional lithostratigraphic scheme of the Triassic sediments on borehole sections in North Bulgaria".

The lithostratigraphic division for the Romanian part is based on publications.

The following lithostratigraphic units are determined in the Moesian platform:

In the Lower red colour complex: Bulgaria - Petrohan Group and Red colour sandstone unit, Stejerovo Fm., Alexandrovo Fm. and Dobrudja Fm.; Romania - Vedea-Jiu Group (Carboniferous-Permian-Scythian), Rosiori Fm. (Permian-Scythian) and horizons Bradesti and Viisoara;

In the Carbonate complex: Bulgaria – Iskar Group, Doirentsi Fm., Mitrovtsi Fm., Russinovdel Fm., Preslav Fm. and Tulenovo Fm.; Romania - Alexandria Fm. (Permian-Scythian-Anisian), Putinei evaporites.

In the Upper variegated colour complex: Bulgaria - Moesian Group, Kozlodui Fm., Komshtitsa Fm., Gorni Dabnik Fm., Tuchenitsa Fm., Dulovo Fm., Kaliakra Fm. and Shabla Fm.; Romania - Oltet Group (Triassic-Lias-Dogger), Segarcea Fm., horizons Curmatura, Beiu and Teascu, Motoci complex.

The present correlation determines three type of units: A) Analogous units (subjective synonyms); B) Units defined on Bulgarian territory and probably present also in Romania; C) Units located only in Bulgarian and respectively in Romanian part of the Moesian platform.

The detailed research and well investigations demonstrate the following results:

A) Analogous units (subjective synonyms):

In the Lower red colour complex there are Red colour sandstone unit (Bulgaria) – Bradesti horizon (Romania); Stejerovo Fm. (Bulgaria) – Viisoara hor. (Romania); Petrohan Group (Bulgaria) – Triassic part of the Rosiori Fm. (Romania, Permian-Triassic) and Vedea-Jiu Group (Romania, Carboniferous-Permian-Scythian).

In the Carbonate complex have been established Doirentsi Fm. (Bulgaria) – Anisian parts of the Alexandria Fm. (Romania, Permian-Scythian-Anisian).

In the Upper variegated colour complex there are Komshtitsa Fm. (Bulgaria) – Curmatura hor. (Romania); Gorni Dabnik Fm. (Bulgaria) – Beiu hor. (Romania); Dulovo Fm.

(Bulgaria) – Teascu hor. (Romania); Moesian Group (Bulgaria) - Segarcea Fm. (Romania) and Triassic part of the Oltet Group (Romania, Triassic-Lias-Dogger).

B) Units defined in Bulgaria and probably developed also in Romania:

In the Lower red colour complex there is Alexandrovo Fm.

In the Carbonate complex there are Mitrovtsi Fm., Russinovdel Fm., Preslav Fm. and Iskar Group.

In the Upper variegated colour complex there is Kozlodui Fm.

C) Units characteristic only of Bulgaria, respectively only of Romania:

In the Lower red colour complex have been established Dobrudja Fm. (Bulgaria), Scythian carbonates (Romania, part of the Alexandria Fm.).

In the Carbonate complex there are distinguished Tulenovo Fm. (Bulgaria), evaporites from Putinei (Romania).

In the Upper variegated colour complex there are Tuchenitsa Fm. (Bulgaria), Kaliakra Fm. (Bulgaria), Shabla Fm. (Bulgaria), Motoci complex (Romania, sedimentary-volcanogenic).

Kinetic and isothermal study of lead ion adsorption onto natural bentonites with different cation exchange capacity (CEC) from Milos Island, Greece

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A laboratory batch study has been performed to investigate the adsorption characteristics of lead (Pb^{2+}) metal ions onto natural bentonite samples (B1, B2, B3) with different cation exchange capacity (CEC) values. Bentonite samples come from Milos island, Greece and were supplied by S&B Industrial Minerals S.A. Bentonites consist mainly of Ca-montmorillonite (>85%) with minor and different amounts of kaolinite, calcite and quartz. The CEC values of B1, B2 and B3 were 86.5meq/100g, 95.7meq/100g and 67meq/100g, respectively. The specific surface area of B1, B2 and B3 was measured as 87.3 m^2/g, 66.6 m^2/g, and 80.1 m^2/g, respectively. Equilibrium and kinetic experiments were performed. The effect of various physicochemical factors that influence adsorption, such as solution pH (2-6), amount of adsorbent (1-10g/L), initial metal ion concentration (5-150mg/L), and contact time (20-360min) were studied. The measured adsorption capacity was appreciably high for most experimental conditions. It has been found that the amount of adsorption of lead metal ion increases with initial metal ion concentration, contact time, solution pH but decreases with the amount of adsorbent. The adsorption process was strongly dependent on the pH of the medium with enhanced adsorption as the pH turns from acidic to alkaline side till precipitation sets in. The amount of Pb^{2+} adsorbed per unit mass (qe) of the adsorbent decreased with an increase in the amount of the clay adsorbent. This may be attributed to two reasons: (i) a large adsorbent amount effectively reduces the unsaturation of the adsorption sites and correspondingly, the number of such sites per unit mass are reduced resulting in comparatively less adsorption at higher adsorbent amount, and (ii) higher adsorbent amount creates particle aggregation, resulting in a decrease in the total surface area and an increase in diffusional path length both of which contribute to decrease in amount adsorbed per unit mass. The removal rate of bentonite increased with an increase in the initial metal ion concentration. Both Langmuir and Freundlich isotherm models fit well (R^2>0.93) the adsorption process. By using the Langmuir isotherm, the maximum adsorption capacities for B1, B2 and B3 were found as 85.47 mg/g, 73.42 mg/g and 48.66 mg/g, respectively. In order to investigate the mechanism of adsorption, particularly potential rate-controlling step, the Lagergren pseudo-first-order kinetic model, the pseudo-second-order kinetic model and the intra-particle diffusion model were used to test the dynamic experimental data. Kinetic analyses not only allow the estimation of sorption rates, but also lead to suitable rate