

(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 m²/g, 66.6 m²/g, and 80.1 m²/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 (q_e) 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

expressions characteristic of possible reaction mechanisms. The calculated kinetic parameters are of a great practical value for technological applications, since kinetic modeling successfully replaces time- and material-consuming experiments, necessary for process equipment design. Kinetic experiments clearly indicated that adsorption of lead metal ion (Pb^{2+}) on bentonite was a two steps process: a very rapid adsorption of lead metal ion to the external surface was followed by possible slow decreasing intraparticle diffusion in the interior of the adsorbent which has also been confirmed by intraparticle diffusion model. Overall the kinetic studies showed that the lead adsorption process followed pseudo-second-order kinetics.

On the mineralogy, physical characteristics, and main elemental content of urban road dust particles from the historic centre of the city of Thessaloniki, northern Greece

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The objective of this study was to characterize urban road dust particles and to study their possible health effects. Road re-suspended dust has been recognized as one of the major contributors to TSP elevating concentrations in Thessaloniki. Eight samples of road dust were collected from the accumulated matter at the edges of major roads in the historic centre of the city of Thessaloniki. The predominant size fraction, according to mass, was 125–500 μm , while the mass fraction of the suspendable dust particles (20–63 μm and <20 μm) was the lowest. Special emphasis was given to the mineralogical characteristics of the urban deposits. Road dusts were mainly composed of quartz, calcite, while plagioclase, dolomite, K-feldspars, amphiboles, micas and chlorite were contained in minor amounts. Amorphous phase was also determined mainly in the finer fractions (20–63 μm and <20 μm). Scanning electron microscopy shows that dust particles consist of subhedral to anhedral crystalline grains, near-spherical and irregular agglomerates as well as few organic materials. EDS analyses reveal that the composition of dust particles is basically Ca-rich, Fe-rich and silicates.

Accumulation and distribution of organic matter in sediments of salt-affected shallow lakes at Szeged, Hungary

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The primary aim of the research is to investigate the accumulation and distribution of organic material [OM] in saline shallow lacustrine sediments. This study focuses on the OM parameters of sediments at two areas with different hydrology, land use, and vegetation cover. The study area is located at the Fehér Lake, Szeged (Hungary). The studied salt-affected lake system has been under intensive fish breeding from 1970. Sampling was made during the spring of 2007. In case of the profiles a 4 m deep 10 cm diameter sediment core was extracted. The OM data were measured with Rock-Eval pyrolysis, and the proportion of different OM groups was determined by the mathematical deconvolution of Rock-Eval pyrograms. It is showed that there are significant differences in OM distribution and characteristics if the different study sites are compared. In case of both profiles similar changes can be detected in the origin, quantitative and qualitative parameters of OM at depths of 15, 30, and 65–70 cm, which proves that the two sites belonged to the same depositional system, and similar changes affected them during sediment formation. Although both profiles have the same depositional environment, significant difference can be seen between the profiles. The profile 1 used to be located in coastal natural territory till 1970 and the profile 2