

3) wind erosion of the gangue

Tailings storage:

1) occupying of fertile land in the valley of the Sora River;

2) dust storms;

3) contamination of surface waters and soils;

4) possible failure of the dam.

The aim of this research is to study the mineral composition of soil samples selected on the territory of Sora copper-molybdenum deposit ("Sorsk Mining. LTD"). The samples were collected within the mining area, the sampling was carried out by the 'envelope' method.

Testing the soil cross-section was carried out within the interval from 0 to 20 cm soil samples weighing not less than 0.5 kg. Each sample is taken from a polished wall pit, starting from the bottom, the middle, or several spots of genetic horizons, and the surface. Definitely, the sample mass should not be less than 1.5 kg. The selected samples were packed in plastic bags and tied with a string. All samples should have the number of observation points. The point samples were collected with a plastic scoop. The preparation of soil samples for analysis is as important as the sampling. It consists of several sequentially occurring phases: pre-drying soil, removing any impurities, grounding soil and sifting it through a sieve with a mesh of diameter of 2, 5 and 1 mm, and then weighting and analysis.

The study of two soil samples was carried out. As a result of studies the particles of both natural (orthoclase, pyrite, calcite, hematite, quartz, molybdenite, biotite, pyrolusite, psilomelane) and anthropogenic origin (slag) were found in soil samples.

By using LMA the elemental composition of sizing samples was determined, besides, the elements of three hazard classes were found.

Thus, the study of chemical composition of soil reveals the source of contamination and establishes the zone of influence of Sorsky copper-molybdenum deposit.

NEW DATA ON RUGOZES OF ALTAI-SAYAN FOLDING

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This research was conducted on the initiative of the Russian Devonian regional stratigraphic commission of Siberia and the Far East. The aim of this work was to improve the International stratigraphic scale of the Devonian, in the particular clarification of the boundary Middle and Upper Devonian in terms of Kuzbass key sections, because they are the most complete in this region[4]. The objective is to determine the age of founded specimens.

Rugozes (four-rayed corals) were the extinct type of corals, they existed from Middle Ordovician to Permian periods.

They are very important for Paleozoic stratigraphy and clarification of the evolution of coral polyps.

Their figures were horn-shaped or cylindrical. Some organisms had a lid to close the aperture, when they were in danger. The main elements of their structure are septa, bottoms, vesicular tissue. They lived both in colonies and individually.

Corals are divided into three types: four-rayed corals, six-rayed corals, eight-rayed corals. This division depends on how many symmetrical parts we can divide the coral in.

The staff of Russian Academy of Sciences conducted the field work on gathering the marine benthic fauna, spores and pollen from the horizons of the section along the river Izyly near village Vassino.

The underlying strata of the section are interbedded of terrigenous and terrigenous-carbonate deposits of izylinsky horizon. Their age was determined by the spore-pollen analysis. The massive grey limestone with remains of various marine species of corals, brachiopods, conodonts, ostracods, typical for Givetian-Frasnian transgression of the West Siberian Sea.[3]

Due to the study of transparent thin rock sections we have defined the following set of corals: *Peneckiella belskayae* Ivania, *Phillipsastraea astreiformis* Ivania, *Tabulophyllum macconnelli* (Whiteaves) [1, 2]. We studied 30 specimens in the cross and longitudinal sections (Fig. 1-2).

As a result, we have concluded that they belong to the Vassinsky horizon of early Frasnian age.

The description of rugozes:

Peneckiella belskayae Ivania

Material: eight thin rock sections.

Diagnosis: the branchy colony of small cylindrical corallites. There are 36-40 septa of two orders with diameter approximately 5-7 mm. The septa formed the rim. First order septa are thin. The second order septa are half of first order septa. Bottoms are flat and rare. There are 2-3 bottoms on 5 mm.

Age: Middle Devonian, Givetian stage.

Area of distribution: Salair, northwest Kuzbass.

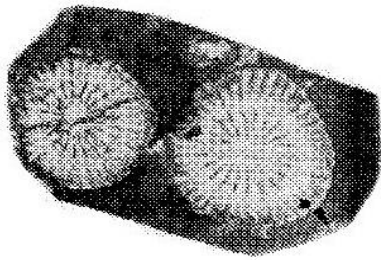


Fig. 1. Cross-section



Fig. 2. Longitudinal section

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PHOTON CORRELATION SPECTROSCOPY OF PARTICLE SIZE DISTRIBUTION OF SOLID MATTER

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For a more complete description of the particle size distribution of sedimentary rocks it is necessary to study the size of the particles in the submicron range (nanometer). This is due to the fact that the particle sizes are responsible for the overall size of the surfaces in contacting with oil. The amount of oil remaining in the reservoir after the end of its service in the form of films covering the surface of the grains depends on the particle size distribution of rocks [3].

Currently, light scattering, which is divided into static and dynamic light scattering is used for researching in nano-sized particles [2]. In static light scattering (often also called laser diffraction), in contrast to the dynamic light scattering (often referred to as photon correlation spectroscopy) to determine the particle size we use not change over time, but the angular dependence of scattering intensity. At the present time to determine the size of particles in the nanometer a laser diffraction is used. In this paper the possibility of reliable particle size analysis with the dynamic light scattering using a spectrometer Photocor Complex will be investigated [1].

PHOTOCOR Complex consists of:

1. PHOTOCOR spectrometer;
2. Spectrometer control unit (correlator);
3. Photocor software;
4. Dynals software.

Photocor software

This package includes modules to manage the correlators Photocor-FC, the process of measurement and processing of measurement results using different methods. The package Photocor Software integrated interpreter containing all the commands of Photocor Software and allowing to organize any experimental procedure - from the simplest to the most complex.

Dynals software

The program of analysis of dynamic light scattering Dynals v2.0 is developed by Alango. The program permits to handle Dynals v2.0 data in three ways:

- The regularization method;
- The method of cumulants;
- The method of discrete components treatment.

These methods use different approaches to mathematical processing of analysis results providing a more correct description of particle size, as one temporal autocorrelation function has a lot of mathematical models.