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THUCHOLITE FROM THE PERMIAN COPPER-BEARING ROCKS IN POLAND

Copper-bearing zone of Zeichstein rocks in Poland was investigated. In the ore samples of sandstone, dolomite and shale, assemblages of thucholite were found. Thucholite forms disseminated spheroidal or irregular bodies. It consists of two components: isotropic and anisotropic one, containing polygonal grains of uraninite. Both thucholitic mass and uraninite have been examined using electron microprobe analysis. It may be suggested, that carbonaceous matter formed from colloidal sapropel was later penetrated by active hydrocarbons and uranium-organic complex. Radiation caused polymerization and partial graphitic preorientation of the uranium-bearing organic material. Secondary ore mineralization was superimposed on the thucholite concretions.

WANDA S. SIKORA, LEOKADIA BUDEK, JULITA ELLMES

ORGANIC MATTER IN KAOLIN FROM KALNO NEAR ŚWIDNICA (LOWER SILESIA)

Kaolin from Kalno contains up to 1.5% organic matter composed of bitumens, humic acids and fulvic acids. Humic and fulvic acids have an aromatic structure with functional groups such as hydroxyl, carboxyl, carbonyl and ester groups. Bitumens have also been found to contain large amounts of aliphatic fragments. The organic matter binds a part of iron present in the kaolin. Its removal increases significantly the whiteness of kaolin.

JERZY FIJAŁ, STANISŁAW OLKIEWICZ

**HYDRONIUM (OXONIUM) ION AS PROBABLE CAUSE OF ACIDITY OF
CALCINATED H-FORM OF MONTMORILLONITES**

Infrared spectroscopic studies of a series of samples have been carried out obtained by calcination of hydrogen form of montmorillonite in temperature range 20-800° C. The IR spectra were recorded using high-temperature vacuum cell. Particular attention was paid to determine the function of proton in calcinated hydrogen form of the mineral under examination. The analysis of infrared spectra obtained indicates the possibility of existence of positive hydronium ions in crystal lattice of the samples studied, even after their calcination in temperature range 300-650° C. This is manifested by the presence of absorption bands in the region 2400-3550 cm⁻¹ (related with n₃ and n₁, vibrations) and of maxima 1430 and 1570 cm⁻¹ (probably related with n₄, vibrations). Polarized water molecules, strongly bound by very active Lewis centres, are important factor contributing to proton acidity of the samples examined since at temperatures higher than 300° C they loose their molecular character due to delocalization of protons in them. It was also assumed that calcination at temperatures higher than 500° C results in reaction between proton, liberated during deprotonization of hydronium ion, and the crystal lattice of samples in question, leading to the formation of Si-OH groups showing acidic properties.

MAREK TOKARZ

HYDROTHERMAL TRANSFORMATION OF KAOLINITE IN AN ALKALINE ENVIRONMENT

Reaction between kaolinite and NaOH solution was investigated. The effect of temperature and stirring on the progress of transformation of this mineral into hydroxysodalite was determined. It is assumed that transformation of kaolinite into hydroxysodalite proceeds mainly through its amorphization and dissolution, with Al^{3+} and Si^{4+} ions passing into solution. These ions crystallize subsequently in the form of hydroxysodalite crystals.

ZENON KŁAPYTA, ANDRZEJ WŁODKOWSKI, MIECZYŚLAW ŻYŁA

THE EFFECT OF GLUCOSE ON SORPTION PROPERTIES OF H-MONTMORILLONITE

The paper presents the results of X-ray, IR spectroscopic and sorption investigations of H-montmorillonite complexes with glucose. It has been found that glucose is sorbed on the surface of montmorillonite without inducing changes of interlayer spacings. The amount of sorbed organic substance depends on its concentration in solution. Glucose sorption modifies only slightly the sorption properties of montmorillonite. Interesting to note is an insignificant increase in sorption capacity with respect to water vapour at relative pressures $p/p_0 > 0,4$.

MIECZYŚLAW ŻYŁA, WITOLD ŻABIŃSKI

SORPTION PROPERTIES OF Mg-FORM OF STILBITE

Sorption properties of stilbite from Strzegom were investigated, in which Ca^{2+} ions had been exchanged for Mg^{2+} . It has been found that sorption capacity of this stilbite with respect to methanol vapours and argon increased significantly. This can be accounted for by the fact that Mg^{2+} ions close the channels of zeolite to a lesser degree than larger Ca^{2+} ions.

LESŁAW A. BARAŃSKI, KSENIA MOCHNACKA

**CARBON AND OXYGEN STABLE ISOTOPIC COMPOSITION IN THE
MUSCHELKALK ROCKS OF THE CHRZANOW AREA (UPPER SILESIA)**

Fourteen determinations of C and O stable isotopic composition were made in limestones, dolomitic limestones and dolomites (dolostones) representing the upper members of the Gogolin Beds, Górażdża Beds, and the Lower Carboniferous carbonate rocks. A diagrammatic profile of these series, their brief petrographic description, and the results are presented in Table 2 and in Figures 1 and 2.

MARIA CZAJA

**NEW DATA ON TARNOWSKITE (TARNOWITZITE) FROM TARNOWSKIE
GÓRV**

A sample of tarnowskite (tarnowitzite) from Tarnowskie Góry (Upper Silesia) containing on the average more than 3.0 wt. % Pb ($> 3.9\%$ PbCO_3) was investigated by electron microprobe, X-ray, thermal and IR spectroscopic methods.. It was found that not more than 1.5-2.0 mol.% of CaCO_3 is replaced isomorphously by PbCO_3 the remaining part of PbCO_3 being present in the form of finely dispersed cerussite.

JÓZEF NEDOMA ,JERZY DYCZEK, ANNA BOLEK

MULTIPLICATION OF SIMPLIFIED MATRIX SYMBOLS . PART I

A multiplication table for symmetry operations coexisting with a sixfold axis is presented. The simplified matrix symbol corresponding to the matrix resulting from two coexisting symmetry operation" can be found immediately in the multiplication table.

CEZARY WIEJA, KRYSTYNA WIEJA

ALITE PHASE IN FUSED PORTLAND CLINKERS

A raw mixture from the Kujawy cement plants was fused at 1810° C in an induction generator. The resulting fused portland clinker was investigated by chemical, X-ray and microscopic methods. It was found that the mineralogical composition of fused clinker does not differ essentially from that of clinker sintered under ordinary conditions, i.e. at about 1500° C. Microscopic studies revealed that the habit of alite crystals changes in fused clinkers. Instead of pseudo-hexagonal alite crystals, typical of sintered clinker, crystals, exhibiting a rodlike habit crystallize in fused clinker. The attack of the liquid phase on alite crystals was also noted.