

# MINERALOGIA POLONICA

Volume 2 1971

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## **AUTHIGENIC ALBITES OF CIESZYN LIMESTONE AND THEIR TWINNING**

Authigenic albite from Cieszyn (Teschen) limestone usually occurs as epitaxial overgrowths on cores from detrital soda-feldspar. It shows, that the prevalent growth twinning is that of X-Carlsbad law. Albite twinned or untwinned grains are quantitatively quite subordinate. Optic properties, especially optic axial angle, refractive indices, as well as X-ray diffractometer data correspond to highly ordered low albites as do other known authigenic soda-feldspars. Both neocrystallized overgrowths and recrystallized (simultaneously carbonitized) cores are structurally homogeneous. The high content of detrital feldspars in limestones, normally in form of cleavage shreds according to basal pinacoid, is responsible for the absence of completely developed K-Carlsbad fourlings and the dominant crystal habit.

MARIA HUBICKA-PTASIIŃSKA, STANISŁAWA JASIEŃSKA

## **ELECTRON MICROPROBE STUDIES ON THE TRANSFORMATION OF TITANOMAGNETITE OCCURRING IN THE CIESZYN SILESIA TESCHENITES**

The present work discusses the presumable mechanism of transformation of titanomagnetite to titanite. At the first stage titanomagnetite is oxidized to titanomaghemite, the diffusion of  $Ti^{4+}$  cations into titanomaghemite crystal lattice accompanying the process of oxidation. At the second stage, titanomaghemite is transformed into phases with the decreasing Fe and increasing Ca, Si, Ti content. This is due to the diffusion of  $Ca^{2+}$ ,  $Si^{4+}$  and  $Ti^{4+}$  cations from the surrounding minerals and simultaneously the diffusion of  $Fe^{3+}$  ions from the mineral to the surroundings. The said cation translocations ultimately lead to the transformation of titanomaghemite to titanite.

JAN ŁOZIŃSKI

## **SYNCHYSITE FROM FOSSIL BONES**

Synchysite  $CeCaF(CO_3)_2$  was found in the Havers canals of dinosaur ribs from Mongolia. It occurs there in the form of very fine yellow-brown anhedral grains. X-ray diffraction pattern of the bone containing 0.57 wt. %  $Ln_2O_3$  contains strong reflections of the main constituent francolite accompanied by a series of weaker peaks characteristic of synchysite. The calculated cell parameters  $a = 7.12 \text{ \AA}$  and  $c = 9.12 \text{ \AA}$  are concordant with those reported by Smith for cerium synchysite. Since the chemically separated lanthanide oxides

contains 57.0 per cent light earth's (La-Gd) and 43.0 per cent heavy earth (Y, Tb Lu), it is supposed that elements of the latter group occur as isomorphic substitutions in francolite.

WITOLD ŻABIŃSKI

### **THE HYDROXYL-STRETCHING REGION OF THE VESUVIANITE INFRA-RED SPECTRUM**

Five distinct absorption bands on vesuvianites spectra have been recorded in the OH-stretching region- at 3670, 3640, 3570, 3530 and ca. 3170  $\text{cm}^{-1}$ . They correspond to vibrations of OH groups linked to different di-and trivalent cations.

JAN KUBISZ

### **STUDIES ON SYNTHETIC ALKALI-HYDRONIUM JAROSITES II. THERMAL INVESTIGATIONS**

Thermal transformations and weight loss in the range 20-1000° C of synthetic alkali-hydronium jarosites were investigated. Chemical constitution expressed by the following general formula  $A_{1-x}(H_3O)_xFe_{3-y}[(OH)_{6-3y}(H_2O)_{3y}(SO_4)_2]$  was confirmed. The DTA curves show six (or five) endothermic and three exothermic peaks at temperatures depending on monovalent cation present. The first four endothermic reactions are connected respectively with: dehydration (removal of H<sub>2</sub>O molecules, 190-340° C), deprotonation (removal of H<sub>3</sub>O<sup>+</sup> ions, 240-440° C), dehydroxylation (removal of OH groups, 300-510° C), and removal of OH or H<sub>2</sub>O trapped in the collapsed framework of decomposition products (about 540° C). The fifth reaction between 560-930° C is due to the loss of SO<sub>3</sub>, and the sixth at 880° C (recorded only for Na, H<sub>3</sub>O-jarosites) to melting of Na<sub>2</sub>SO<sub>4</sub>. It was assumed that out of the three exothermic reactions the first at about 510 corresponds to the formation of a -Fe<sub>2</sub>O<sub>3</sub>, the second at 580° C probably to liberation of "post-anioncages" energy, and the third at 700-780° C, splitting the sulphate dissociation peak, to alkali sulphate formation.

ADAM GUT, ZENON KŁAPYTA

### **SORPTION COMPLEXES OF MONTMORILLONITE WITH AMMONIUM ORGANIC CATIONS**

The article presents the results of X-ray and infra-red spectroscopic examinations performed on montmorillonite sorption complexes with ammonium organic cations containing one or two aliphatic- chains of different length. In the former case, a bimolecular, in the latter a monomolecular layer of organic ions is formed in the interlayer space, the planes of carbon zigzags being perpendicular to 001 planes of montmorillonite. Montmorillonite complexes with cations containing one aliphatic chain are characterized by the values of  $d_{001} = 18.1$  Å; for the cations with two chains, on the other hand,  $d_{001} = 13.7$  Å.

The organic substance does not form hydrogen bonds with montmorillonite network; it causes, however, the interlayer water to be removed.

KRZYSZTOF P. PAWŁOWSKI

### **THE INFLUENCE OF GRAPHITIZATION OF PETROLEUM COOKS AND OF GRINDING ON THE SHAPE OF GRAPHITE CRYSTALLITE**

The structural changes in three different petroleum coals were examined taking place during heat treatment in the temperature range 1350-2800° C (graphitization). Moreover, the influence of mechanical grinding on the shape of artificial graphite crystallites was investigated. Three stages of growth of the dimensions of crystallites ( $L_aL_c$  and  $L_{112}$ ) were distinguished accompanied by decrease of  $\gamma$  parameter during the graphitization process of petroleum coals. The most important changes in the dimensions of graphite crystallites, taking place during grinding, occur in the initial 60 minutes of this process.

LESZEK STOCH

### **ON THE CLASSIFICATION AND NOMENCLATURE OF CLAY MINERALS**

A detailed classification of clay minerals with layer and layer-ribbon structures has been presented. The structure of layers has been taken as the division basis of minerals which have the crystalline structure composed of homotypic layers, and the kind of combination of layers as the criterion for classification of mixed-layer clay minerals composed of heterotypic layers. Some simplification and unification of nomenclature of layer silicates have been proposed.