

PS08.02.05 ON POSSIBLE REASONS OF SULFATIC SODALITE MODULATIONS. V.G.Evsvyudin, Institute of Earth's Crust, Irkutsk; A.N.Sapozhnikov, Institute of Geochemistry, Irkutsk; R.K.Rastsvetaeva, Institute of Crystallography, Moscow; A.A.Kashaev, Teacher Training Institute, Irkutsk

Sulfur containing sodalite minerals are often characterized by satellite reflections on their diffraction pattern, causing commensurate and incommensurate structures. As it is known the great amount of potassium atoms (>1 per cell) prevents the arising of satellite reflections in hauyne, we have carried out X-ray single crystal analysis of the potassium-rich (1.8 atoms) sample from Arissia (Italy). The structure was refined up to $R=0.032$ under the P-43n space group, 164 reflections. As a result we established that framework oxygen atoms occupy only one 24(i) position, and SO_4 group has two statistical orientations. K, Na and Ca ions are distributed statistically in three 8(e) close positions. The large K atom occupies one of these together with Na and its position is firmly fixed between three framework oxygen atoms and three oxygen atoms from SO_4 group, that prevents framework distortion. On the contrary Ca and Na atoms are suitable for the sodalite cavities but they are too small for the hauyne framework cavities. This is one of the reasons for the structure modulation of some sulfatic sodalites containing small amount of K-atoms.

PS08.02.06 DIFFRACTION AND NONDIFFRACTION STUDIES OF K-FELDSPARS AND HIGH-Ca PLAGIOCLASES. Moroz T.N., Grigorieva T.N., Lesnov F.P., Arkhipenko D.K. United Institute of Geology, Geophysics and Mineralogy, Siberian Branch RAS, 630090 Novosibirsk, Russia

The determination of degree of order and composition in a large collection of different genesis K-feldspars and the high-Ca plagioclase samples from mafic rocks of some abyssal and middle-abyssal massifs approached as usually by means of X-Ray powder diffraction has been additionally carried out by vibration (Raman and infrared-IR) spectroscopy methods.

The procedure of structural feature determination extended over a series of sanidine-actinolite-microcline has been developed according to nondestructive laser Raman spectroscopy data sensitized to intermediate or long-range order. Unpolarized Raman spectra were measured in right-angle scattering geometry using Jobin Ivon spectrometer RAMANOR U 1000 with single channel detection system. 514.5 nm line of Ar⁺ ion laser was used as the excitation source. Fluorescence has been a serious impediment to observation of Raman spectra of the samples. Different regimes of recorder Raman spectra and laser produced fluorescence spectra were selected.

The relationship between fluorescence and factors of mineral formation can be followed. It is discussed as possible to use the halfwidth, peak position, the splitting of Raman line of feldspars as typomorphic property which allows distinguishing mineral grains with different conditions of origin. A comparison between data obtained by means of Raman spectroscopy and results of X-ray diffraction and IR spectroscopy estimated showed that they were in good agreement.

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PS08.02.07 VACANCY DISTRIBUTION IN A SYNTHETIC NONSTOICHIOMETRIC PYROXENE. M. Okui, F. Marumo, H. Sawada, Department of Earth Sciences, Nihon University, Japan

Nonstoichiometric pyroxenes, which were supposed to characterize of highpressure products, were synthesized under ambient pressure, and the structure was refined to elucidate the structural details. The crystals were grown from a silicate melt with a chemical composition belonging to the system diopside-anorthite-esseneite. Microprobe analysis showed that these crystals contain practically no Mg and about one-eighth of M(1)+M(2) sites were vacant. This amount of vacancies is outstandingly large among the values of nonstoichiometric pyroxenes so far reported. The chemical formula derived from the results of microprobe analysis and structure refinement is $(Ca_{0.75}Fe_{0.10}\square_{0.15})(Al_{0.78}Fe_{0.16}\square_{0.06})(Al_{0.50}Si_{1.50})O_6$. The vacancies are distributed over both M(1) and M(2) sites, but predominant in M(2). Compared with diopside, the mean of T-O distance is long due to the replacement of Si with Al, M(1)-O is short due to the replacement of Mg with Al and Fe, M(2)-O is long probably due to the large amount vacancies. As a result, the crystal has a cell volume comparable with that of diopside. In this point the present crystal is distinct from the nonstoichiometric pyroxenes known to date.

PS08.02.08 NEW DATA ON TOBERMORITE STRUCTURE. N.I. Organova, A.E. Zadov, N.V. Chukanov, O.V. Kuzmina, M.A. Lizarev, A. V. Mochov, N. V. Trubkin, Inst. of Ore deposits, Moscow, Russia.

Many tobermorite samples from the different deposits were investigated by different methods. According analytical electron microscopy and SAD there are chemical and defect inhomogeneity in every sample. Several types of electron diffraction patterns have been observed. Except two twin planes (001) and (100) one can see also two satellite types on SAD (hk0) patterns that correspond to different periodic disturbances of perfect structure. IR-spectra of different calcium hydrosilicates have shown systematic displacement of the main absorption band responsible for an anion type and its condensation degree. According this study plumbierite and tobermorite have ribbon anions contrary to literature ideas about chain ones. These facts and Hamid's tobermorite model were foundation for the model of its ribbon structure. The main idea is a possibility of two ways for condensation of three-membered silicium-oxygen chains to ribbon: one along [001] and other along [100].

We found a new monoclinic tobermorite variety with twice value of a axis in comparison with Hamid's, one and another monoclinic angle.

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Zadov A.E., Chukanov N.V., Organova N.I. Zap.Mineral., 1995. (in Russian).