

International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2015, pages 253-260

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## Insoluble anhydrite as product gypsum dehydration according to electron paramagnetic resonance spectra

Khasanov R., Khasanova N., Nizamutdinov N., Izotov V.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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### Abstract

© SGEM2015. Electron paramagnetic resonance studies were carried out with two main aims. Firstly, to detect the appearance of an insoluble phase anhydrite formed due to the dehydration of gypsum. Secondly, to study the dynamics of development of insoluble phases in the dehydration sequence in natural gypsum. Annealing gypsum products ("Marino steklo") are mineral polyphase system, in which there are co-crystallization and recrystallization processes to form a system of point defects in each of the phase components of the mixture. Found that in the range 25-450 °C temperature annealing products may include gypsum,  $\alpha$  and  $\beta$  bassanite,  $\alpha$  and  $\beta$  soluble anhydrite, insoluble anhydrite (Crystallography. Reports, vol.59(3), pp.399, 2014). In this paper, we continue the detailed study of the formation of the crystalline structure of the insoluble anhydrite during dehydration. It was found that the lines of the EPR spectra of radical ions that are typical of structure of natural anhydrite, begin to appear with 225 °C. In the temperature range 275-350 °C dehydration formation of an insoluble anhydrite becomes the dominant process. In the temperature range from 225 to 450 °C during the dehydration of gypsum was recorded the birth and formation of the EPR lines, structurally different radical ions SO<sub>2</sub>·<sup>-</sup>, SO<sub>3</sub>·<sup>-</sup> and atomic ion-radical O·.

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### Keywords

Anhydrite, Annealing, Dehydration, Electron paramagnetic resonance, Gypsum, Radiation