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Title of Ph.D. thesis: **Strontium evaporite and products of transformations in the Carpathian Foredeep (Wieliczka – Tarnobrzeg region).**

Summary

Strontium is common in the earth's crust, especially in igneous rocks and evaporates, and in living organisms. Its accumulation, especially in increased contents, has been the subject of research in the basin since the 1950s, which was dictated by the search for an industrial accumulation of this element and research works on the presence of sulfur in the Tarnobrzeg area. After a period of increased research, due to technological changes (e.g. production of radio and cathode ray tubes), the search for strontium in the Carpathian Foredeep was halted, and the research was continued only by a few scientists who focused on its local occurrences in the context of analyzes of the environment of evaporate sedimentation. In the opinion of the author of this study, the potential of this topic has not been fully realized, and the overall research has never been presented collectively for the Miocene Basin. The main topic of the Ph.D. thesis is therefore the analysis of distribution of strontium in the evaporation formations occurring in the chloride and sulphate facies, and in the post-gypsum carbonate formations occurring in the area from Wieliczka to Tarnobrzeg.

The main goal of the work was to systematize the results of strontium content obtained so far in individual facies, supplement them with new areas, research, and statistical methods, and define standard values of Sr for individual facies. In addition to the quantitative analysis of the occurrence of Sr, the topic of the distribution of this element in the Miocene Basin, its minerals, and environments in which strontium enrichment or depletion could occur, resulting in the occurrence of anomalies and deviations from standard values, were discussed. The subject of the representation of laboratory evaporation models into the actual distribution of Sr in the studied rocks was also discussed.

The test samples were taken from the most representative samples selected on the basis of the literature. In addition, rock samples, measurements and archival analyzes were used to supplement the data with areas no longer available and to obtain fully representative data. To determine the presence of strontium, full and partial chemical analyzes, Raman spectroscopy, XRD X-ray examinations, microscopic analyzes with the use of SEM / EDS, cathodoluminescence studies and an electron micro probe were used. The entire work was supplemented with statistical studies of strontium dispersion in the studied basin.

The results obtained during the research allowed to present the overall strontium distribution in various facets of the Miocene Basin. For the first time, the diversity and causes of Sr distribution in such a large area were analyzed. It was unequivocally found that the presence of strontium and its minerals in the study area is heterogeneous, and this is mainly related to their genesis. The supply of Sr to the basin was not uniform, and at the same time, several processes enriching the sediments with strontium and depleting them took place. They took place at the stage of sedimentation and diagenesis, as well as later during the reconstruction of the basin. Strontium was captured in sediments because of isomorphic substitutions, and then again, during weathering and erosion, it was released into the environment and could participate in the process of solution migration and diagenesis (recrystallization) of evaporate sediments. In the studied area, no representation of laboratory models of strontium decomposition in sulphates was found in relation to the actual strontium content in sulphate rocks of the Carpathian Foredeep.

The obtained results of this Ph.D. thesis laid the foundations for further research on strontium, which in the future may result in the creation of a model of the occurrence of this element in the entire Miocene Basin, and a wider application of the method of studying strontium isotopes.