

CARBON AND OXYGEN ISOTOPES AS INDICATORS OF POLYGENIC NATURE OF THE MIDDLE MIOCENE (BADENIA) RATYN LIMESTONE IN WEST UKRAINE

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Evaporite replacements and their associated fabrics within carbonate strata are documented in many studies. The timing and conditions under which the complex processes of the dissolution and replacement occurred, can be established when integrated standard petrographical techniques and stable isotopic analyses are used. We used such an approach to the Middle Miocene limestones which are physically and (partly) genetically related to Badenian gypsum deposits and which are called "Ratyn Limestones". The term itself was coined for marine, massive limestones which are overlying gypsum deposits in Podolia; when gypsum is lacking, the Ratyn Limestones occur above sandy and Lithothamnium limestones. The earlier study of the stratotype section in the Mount Ratyn near Lviv showed that only the uppermost (10-cm-thick) part of the limestones contains a marine fauna, and that most lime-

stones are barren, with textural indications of the former presence of gypsum. In the Anadoly section near Khotyn, in addition to the two limestone types recorded in the Mount Ratyn, also limestones which originated during the gypsum deposition stage owing to inflow of new seawater. All these limestones differ in respect to their textures and their $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values. Marine limestones related to transgression clearly postdating gypsum deposition are characterized by the heaviest isotope values ($\delta^{13}\text{C}$: -3.6‰ , $\delta^{18}\text{O}$: -0.4‰), and limestones which are associated with siliciclastic intercalations within gypsum, thus indicating interfingering of mineralogical facies in the marginal zone, as well as limestones filling the karst cavities in gypsum are lighter ($\delta^{13}\text{C}$: -6.5‰ , $\delta^{18}\text{O}$: -3.5‰). In comparison to those both groups, post-gypsum limestones are clearly lighter ($\delta^{13}\text{C}$: -27.9‰ , $\delta^{18}\text{O}$: -8.6‰).