

THE ISOTOPIC COMPOSITION OF OXYGEN AND CARBON IN CARBONATES  
FROM SOME ORE DEPOSITS IN SLOVENIA

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Abstract

The isotopic composition of oxygen and carbon of carbonates from some ore deposits in Slovenia has been determined.

The mass - spectrometric analyses of oxygen and carbon of different carbonates from the uranium mine Žirovski vrh show that the  $\delta O^{18}$  values of carbonates in the deposit range from + 12.40 % to + 21.27 % (SMOW), and the  $\delta C^{13}$  values from - 10.32% to - 3.25% (PDB). It must be pointed out that dolomite is enriched in  $O^{18}$  in comparison with calcite and siderite. Changes in the isotopic composition of oxygen and carbon of carbonates from Žirovski vrh could be explained by a change in the isotopic composition of the solution with time. On the other hand, it is also possible that there was essentially no change in the isotopic composition of the solution during precipitation of the early and the late stage carbonates; in this case the increase of  $\delta O^{18}$  of the late stage probably indicates the precipitation of carbonates from a solution with a dominant meteoric water component. The  $\delta C^{13}$  values of carbonates may indicate the presence of carbon of two origins: organically derived carbon, and carbon in solution with a dominant meteoric water component.

The carbonates from the uranium ore deposit Sv. Valentin have approximately the same isotopic composition of oxygen and carbon as that found in the carbonates from the uranium mine Žirovski vrh, whereas the carbonates from copper ore deposit Škofje appear to be slightly enriched in  $C^{13}$  in comparison with the carbonates from Žirovski vrh.

The isotopic composition of oxygen in limestone from the mercury ore deposit Idrija shows a depletion in  $O^{18}$  that is probably caused by reactions with ore bearing solutions. The  $O^{18}$  and  $C^{13}$  values of limestone from the zinc - lead ore deposit Mežica probably indicate that the ore bearing fluid essentially did not change the isotopic composition of the wall rock. It should be pointed out, that these conclusions are to be considered only as a preliminary information.