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## РАЗДЕЛЕНИЕ ИЗОТОПОВ КИСЛОРОДА ПРИ СИНТЕЗЕ КВАРЦА В ГИДРОТЕРМАЛЬНЫХ УСЛОВИЯХ

E. O. DUBININA, I. Z. LAKSHTANOV. SEPARATION OF THE OXYGEN ISOTOPES WHILE  
THE SYNTHESIS OF QUARTZ AT HYDROTHERMAL CONDITIONS

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Isotopic fractionation accompanying the synthesis of crystalline quartz from amorphous silicon dioxide at hydrothermal conditions has been studied experimentally within interval of temperatures 400–600 °C at pressure 100 МПа. The single-type dependence was revealed between isotopic composition of oxygen in synthesized crystals and their size in all samples. In the field of minimum dimensions (50–100 мкм) the fractionation coefficient is lesser than the equilibrium one, and it is approaching to 1.0 along with decrease of a crystal radius. In the field of medium dimensions (from 50–100 to 100–180 мкм) the fractionation coefficient outdoes the equilibrium value for 1.5–2.0 % in average, but with increase of the crystal radius it becomes lesser and its value approaches to equilibrium one. It is shown that while the quartz synthesis in the present conditions the isotopic equilibrium hasn't place, but the coefficient of isotopic fractionation depends on the crystal growth velocity which is a function of linear dimensions of the crystals; in this way, the dependence between isotopic composition and the size of crystals could be explained. The model of isotopic fractionation on the interface „growing crystal – fluid”, correlated with experimental data, is proposed also.