

THE NATURE OF RHYTHMIC LAYERING AND SPECIFIC FEATURES OF ORE-FORMING PROCESSES ASSOCIATED WITH THE MAFIC AND ULTRAMAFIC LAYERED INTRUSIONS

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The nature of rhythmic layering, in general, and of that on the isotopic level, in particular, remains unclear so far. The proposed model supposed as an universal one, implies supercooling of magmatic melt where crystallization centers repeatedly move down to the bottom under solid phase sedimentation (Skiba, Pushkarev, 1985). According to the model, crystallization begins with melt supercooling and crystallization centers formation. But solidification gives rise to solid phase plunging to the bottom of the magmatic chamber and removal of crystallization centers from the volume of melt. New crystallization centers can appear with further supercooling of the liquid phase. As it takes time, the crystallization will stop in the upper part of the magmatic chamber where there is no more solid phase. Meanwhile, the plunging crystals of various minerals differentiate in density. As a result, a sequence of layers with different ratio of plunging crystals is formed at the bottom of the magmatic chamber. If the process is repeated there appears a rhythmic layering. Otherwise, the layering will be cryptic. If the melt is isotopically heterogeneous due to its contamination with the crust component in situ, the rhythms will be apparent on the isotopic level. They result from the change in the ratio of crystals plunged from isotopically different parts of the melt as well as change ratio of crystal phase and intercumulus liquid differing in isotopic composition. In terms of the model the specific features of mineralization associated with mafic and ultramafic layered intrusions are discussed.