

Model of genesis of ore-bearing hydrothermal solutions in acid magmas

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A P-T diagram showing partitioning of ore and volatile components in crystallizing and fractionating acid magmas have been calculated on basis published experimental data. It shows presence of areas of maximum concentrations of these components in a fluid phase of the magmas at high (0.1 - 0.4 GPa) pressure, reflecting P-T conditions for generation of highly mineralized hydrothermal solutions. The existence of these maximums of concentrations is conditioned by increase of amounts of ore components in a residual melt during the early and middle stages of magma crystallization and their decrease at the late stage, after formation of phases highly saturated in them (cassiterite, sulfides, etc.).

The presence of these maximums allows to explain different metallogenic specialization of granite-derived hydrothermal solutions, a zonal distribution of ore deposits around the intrusions, a sequential character of mineral formation in the hydrothermal ores, the relation of highly mineralized hydrothermal solutions to deep-seated parts of the granite intrusions, and other phenomena.