

## **GRANITOID SERIES PROPER AS PRODUCTS OF THE MAGMATIC REPLACEMENT OF THE EARTH'S CRUST AND FOLLOWING META-MAGMATIC TRANSFORMATION OF PRIMARY GRANITOID MAGMAS**

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The database Mesozoic granitoids of the Mongol-Okhotsk zone (974 massifs of total area more than 150000 km<sup>2</sup>) was used to formulate the empirical constraints of petrogenetic models for granitoid series proper (crustal series). These series constitute more than 90% of the total volume of granitoids. The principal geochemical properties of such a series are: their geochemical affinity to the continental crust; total debasification with adding the majority of incompatible elements, including those compatible with the crust (REE, Hf, Ta, Nb), and also Sn and F; differences (up to contrary) between trends of final phases (crystallisation differentiation) and the main trend of series for such indicators as HREE, total REE, Li, and F; enrichment of rare metal granites by lithophile trace and ore elements up to levels, which can not be reached in processes of simple crystallisation differentiation of related prevailing granitoid magmas; similarity of geochemical trends for magmatic series of different alkalinity. The model which fits includes three main stages: I. Magmatic replacement in prograde or retrograde forms, resulting in the formation of hyper-eutectic primary magmas of granite, granodiorite, and syenite composition. II. Meta-magmatic transformation of primary granitoid magmas to near-eutectic granitic magmas, which are enriched in incompatible and graniteophile elements. III. Formation of final phase magmas and (often) their transformation by residual magmatic and trans-magmatic fluids. These are complimented by partial melting, crystallisation differentiation and acid-basic interaction.