



Comparative petrology, geochemistry and mineral chemistry of the Late Cretaceous magmatic rocks from the Central Srednogorie magmatic zone, Bulgaria

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The Late Cretaceous magmatic activity developed in the Central Srednogorie magmatic zone results formation of several volcano-plutonic complexes (the Elatsite-Chelopech, the Assarel-Medet, the Svoboda –Ovchiilm, the Krasen-Petelovo, the Vrankamuk, the Pesovets and the Elshitsa). The calc-alkaline varieties of the intermediate rocks in the zone predominate. This character probably is due the minor development of the differentiation processes in the majority of the complexes. They belong to the calc-alkalie series, but in some of the complexes alkalinity is increased up to subalkaline (the Elatsite-Chelopech and the Assarel–Medet volcano-plutonic complexes). On a TAS diagrammes the igneous rocks of the individual magmatic centers plot on continuous trends, usually in saturated suite and in some of the centers also in oversaturated one. The peculiar evolution from intermediate to more basic stages is a common characteristic for most of the centers, but it is complicated by fractional crystallization and mixing between more primitive and evolved magmas. Important chemical argument for magma-mixing, in addition to the petrographical and mineralogical features is its ability to explain some trace element concentrations in excess to those predicted by crystal fractionation. The chondrite-normalized REE-patterns are generally very similar, suggesting common genetic relationship. All patterns resemble closely those of the typical island-arc magmas. Most of the patterns do not show negative Eu-anomalies. The MORB normalized patterns of the major and some trace elements of the magmatic products of the zone show enrichment on LILE and low ratio of HFSE (Ce, Zr, P ad Hf) and strong Nb anomaly. These features are typical for subduction-generated magmas.