



## **Hybridization between mafic and felsic magmas-a case study in Central Turkey \***

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On the Eastern Tauride Belt, the Cretaceous calc-alkaline Karamadazı Granitoid consists of quartz diorite containing mafic microgranular enclaves (MME) and leucocratic granite. The quartz diorite consists of plagioclase ( $An_{8-65}$ ), hornblende, biotite, K-feldspar, quartz, epidote and titanite. Subrounded MME in the quartz diorite are holocrystalline, fine-grained, quartz diorite to diorite in composition, and display a similar mineral assemblage to their host.

MME and quartz-diorite have phenocrysts with disequilibrium microstructures indicative of hybridization. Plagioclase crystals exhibit inverse, normal and oscillatory zoning with maximum core-to-rim An content increase up to 38 % in the enclave and 40 % in the quartzdiorite. Both hornblende and augite show normal and reverse zoning even in the same sample. Existence of quartz ocelli is also evidence for disequilibrium.

The quartz diorites show similarity to high-Al TTG (tonalites-trondhjemites-granodiorites), with their high  $Na_2O$ , Sr, LREE, and low Mg#, Cr, HREE contents, and are suggested to be produced by extensive interaction between the crustal and mantle-derived melts through mixing at depth. In contrast, leucogranites have geochemical characteristics distinct from the quartz diorites and MME, and are probably not involved in MME genesis. MME are suggested to be formed through injection of successive pulses of basic magma into upward mobile magma chambers containing cooler, crystalline quartz diorite magma.

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