

PETROLOGY OF DIAMONDIFEROUS MANTLE DERIVED ROCKS

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Mantle material can not be observed. None of the geologists held in hands a rock gained below M.level. The only mantle sendings are intratelluric minerals crystallized in deep-seated chambers and beared out by magma into earth's crust. Because of this the rocks of mantle origin are always polyfacial.They contain minerals and their sequences belonging to set of facies in respect to depth formation. Diapason of the depth may be enormous as with diamondiferous rocks always linked to very deep-seated chambers.However, minerals crystallized in the such chambers are preserved in the rocks mainly as inclusions in diamond. The rest majority of minerals crystallized far beyond the diamond facies. Deep-originated minerals serve as seed-crystals for minerals of final crystallization in the earth's crust, aiding to their metastable growth. The same is also true for diamond itself. In original state it is preserved mainly as inclusions in rock-forming minerals, being rich in volatile elements like helium with very high $3\text{He}/4\text{He}=10^{-2} -10^{-4}$. In this respect original diamond is similar to diamond of meteorites and differs from diamond of kimberlites and metamorphic rocks, which experienced recrystallization and degassing with decreasing of $3\text{He}/4\text{He}$ ratio on several orders. Recrystallization of diamond routinely accompanied by disintegration of its grains. Except that in specific fluid kimberlite chambers the process could gain the opposite capacity to assembling recrystallization of diamondiferous intrusive rocks and produce megacrysts including large diamond crystals.