Magmatism, Mineralogy and Diamond Potential of the Arkhangelsk Diamond Bearing Province

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Arkhangelsk diamondiferous province (ADP) includes about 60 bodies of kimberlites (360-380 mln.y.), melilitites and basalts on 20000 km^2 area..Platform stage of region development is connected with formation of Lower Proterozoic fold areas and belts with the next cranitization of continental crust of north of the Eastern-European platform.

There are several kimberlite fields with lateral petrological-geochemical and mineralogical zonality. Central Zolotitskoye field (including the M.V.Lomonosov diamond deposit) is composed by kimberlites of type II (high content of chromespinels, low content of garnets and practically absence of picroilmenite). . In the Verkhotinskoye and Kepinskoye fields, which are rimmed of the Zolotitskoye field, low diamond grade and non-diamondiferous kimberlites of type I (high contents of picroilmenite and garnet at relatively low grade of chromespinels) are distributed together with olivine melilitites.

Untill last time the prospecting of diamonds was connected with searching of II type kimberlites. High diamondiferous the V.Grib kimberlite pipe was found in 1996. The pipe is composed by i type kimberlites.. This discovery have been opened new perspectives of the ADP.

There are clear differences for 1 and II types of ADP kimberlites (&Sm and &Nd, heavy mineral contents, morphological and isotopic features of diamonds). The diamonds with higher H_2O and CO_2 contents have clear signs of solution in the oxided water- silicate-carbonatic magms. The forms of diamond crystals from the ADP and from Yakutian and S.African provinces are very different.