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# The comparative characteristic of PGE distribution in the mantle xenoliths of the Udachnaya pipe (Siberian craton) from the deformed and granular peridotites and eclogites.

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We report the first data of PGE distribution in the unusually fresh deformed peridotites, granular peridotites and eclogites from the Udachnaya pipe. Mantle xenoliths from the Udachnaya pipe have different origin, structure and chemical composition and represent comprehensive depths in the Siberian craton. Equilibration temperatures and pressures for Udachnaya deformed and granular peridotites are 1250-1400º C and 5,7 – 7 GPa and 750 - 1250 º C 3,5 - 6 GPa, respectively [1]. Equilibration temperatures and pressure estimated for eclogites ranged from 1245 to 1320 º C and 6 – 6,5 GPa [2].
We assume that the silphides are the main host mineral of PGE in our rocks [3]. The sulphides from eclogites have a narrow range and little concentration of compatible elements (Ir+Ru from 0,002 to 0,144 ppb) in contrast to incompatible PGE (Pt+Pd from 0,001 to 23,24 ppb). Ir show good positive correlation with major elements ($CaO+Al2O_3$). Pt and Pd have no correlation with these elements. There is a good positive correlation between PGE and $Fe2O_3$. Thus, PGE in eclogites are not controlled by silica components and belong to iron phase enrichment. The same situation is observed in granular peridotites. The sulphides in these rocks are not identified, but there is a good correlation of $Fe2O_3$ with PGE in the whole-rock. And PGE show negative correlation with major elements ($CaO+ Al2O_3$).
The sulphides were identified in two samples of the deformed peridotite. Chondrite normalized PGE concentrations in the sulphides are three orders higher than that in the deformed peridotites whole-rock. But the pattern shapes is similar. The distribution of PGE in the deformed peridotites generally corresponds to that in granular peridotites of the Udachnaya pipe and xenoliths from Lesotho [4]. However, in contrast with broad range concentrations PGE in the granular peridotites of the Udachnaya pipe ((0,0003 - 0,02) $\times$ chondritic), the deformed peridotites show nearly flat pattern from Os to Pt ($\sim$0,01 $\times$ chondritic). Only Pd concentrations in the deformed peridotites range broadly (from 0,08 to 6,13 ppb). They are enriched in Pd in contrast to granular peridotite from the Udachnaya pipe and the Lesotho.
Our PGE data for the deformed peridotites were compared with the previous PGE literature data in cratonic, circum-cratonic, orogenic peridotites and peridotites from ophiolites. The low-enriched part of the deformed peridotites is in agreement with cratonic peridotites, three samples of the enriched deformed peridotites are in the circum-cratonic peridotites area and Uv268-02 sample in the orogenic peridotites area. There is no good correlation between major elements and PGE, but the deformed peridotites were enriched in incompatible and depleted in compatible elements during the silicate metasomatism. Thus, we assume a complex evolution of PGE composition in the deformed peridotites during the silicate metasomatism. On the first stage the deformed peridotites were depleted in compatible elements followed by the increase of Ga and Cpx. On the last stage the enrichment of Pt, Pd and Re is probably a result of submicron sulphide phases skimping in the interstices of mantle rocks.