

The Hunt for Platinum Group Minerals in the Reinfjord Intrusive Complex

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50 km W - NW of the Norwegian city of Alta in Troms region, is the Reinfjord Intrusive Complex (RIC), composed of three intrusive events that are approximately 560 - 570 Ma (Roberts, 2006). Drill holes from 2011 (RF-1 and RF-2) show two spikes for economic elements, one Cu-Ni reef low in PGE at depth of 86-93m and a PGE reef low in Cu-Ni at 107-113m. The Reinfjord deposit differs from other PGE deposits such as Norilsk (Russia) and the Merensky reef (South Africa), indicating a completely new type of PGE deposit.

The PGE spike in RF-1 is concentrated in a 6m thick Orthopyroxene pegmatite with plagioclase, amphibole, biotite, Dolomite and rutile. That shows a total amount of 0.79 ppm Pt+Pd+Au+Os (Iljina, 2012). When comparing the $\delta^{34}\text{S}$ signature of the PGE reef with the Cu-Ni reef 20m above, it shows a distinct difference, -0.40 for the PGE reef and -4.56 for the Cu-Ni reef. This clearly indicates that the Sulphur has different sources.

This study looks into the details of the PGE's and their assembly, with the aim of identifying the process that forms this kind of a deposit. Thin section microscopy, SEM imaging, SEM mapping, EPMA and whole rock geochemistry are used to find cryptic variation from the Dunite host rock and into the PGE rich reef. BSE and EDS are used to detect and identify the PGE's. Thin sections, together with a thin section constructed from heavy element separation will give the highest probability of finding and identifying the PGE's. Current reflected light and SEM analysis have not revealed any PGE's. Therefore opening the possibility that the PGE's are substituting into pentlandite.

References:

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