

Flake graphite occurrences in a high-grade metamorphic region in Sortland (NW Norway)

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The aim with this study is to determine the quality of flake graphite in high-grade metamorphic rocks in Sortland, NW Norway. Flake graphite is present in graphite schist and samples were collected at three different locations in Sortland: Hornvatnet, Lamarkvatnet and Vikeid. The host rocks of the graphite schist are dolomite or calcite marble, pyroxene gneiss and amphibolite. Metamorphism reaching high temperatures on organic and sedimentary material in the Proterozoic led to the formation of flake graphite. According to previous studies, the graphite content in the area varies between 5 and 30%¹. Sampled graphite schists were fragmented by selective fragmentation (selFrag) and analyzed using polarization microscopy, scanning electron microscopy, Raman spectroscopy and X-ray diffraction. The grain size and texture of the sampled graphite schists vary macroscopically. Some contain abundant, visible, big (up to 5 mm in size), and ordered graphite flakes with layered structure while other schists contain smaller graphite flakes and a lower graphite content. Pictures from the SEM indicate that the graphite flakes consist of several parallel layers with clean surfaces. The results from both Raman spectroscopy and XRD support the SEM analyses that the flake graphite consists of several parallel layers and also imply that the flake graphite is almost free from defects.

References:

¹Gautneb, H. & Tveten, E. (2000) The geology, exploration and characterisation of graphite deposits in the Jennestad area, Vesterålen, northern Norway. *Norges geologiske undersøkelse Bulletin*, 436, pp. 67-74.