Geophysical Research Abstracts Vol. 21, EGU2019-12651, 2019 EGU General Assembly 2019 © Author(s) 2019. CC Attribution 4.0 license.



## Precambrian iron-sulphide mineralization of NE Estonia

Siim Nirgi (1,2) and Alvar Soesoo (1)

(1) Geological Survey of Estonia, Department of Georesources, Estonia (siim.nirgi@egt.ee), (2) Institute of Ecology and Earth Sciences, University of Tartu, Estonia (siim.nirgi@ut.ee)

The magnetic anomaly, representing magnetite bearing iron ore in Jõhvi area, North-East Estonia was discovered in early 1930. The Precambrian rocks are covered by 250-metre thick complex of Lower Paleozoic sedimentary rocks and Quaternary sediments. The ore body is represented by banded magnetite bearing quartzites that occur as bands, lenses and inter-beds in subvertical granulitic gneisses which are cut by granitic veins. In addition, sulphide minerals such as pyrite and pyrrhotite occur. Metamorphic conditions indicate temperature range of 650 to 750 C and calculated pressures of 4.3 to 5.6 kbar. The age of iron mineralization is unknown, however cutting granitic veins yield age of 1.80 Ga. In magnetite quartzite SiO<sub>2</sub> content ranges between 41 wt% to 50 wt%; Al2O<sub>3</sub> ranges from 2.3 wt% to 12.7 wt% and total iron content ranges from 21.7 wt% to 45.2 wt%; P2O5 content can be as high as 0.36 wt%. Manganese content is very high ranging from 1.14 wt% to 6.8 wt% and is in good positive correlation with iron. This rock complex can be compared with that of the Bergslagen area in Sweden. The earlier estimates indicate the resource more than 1 billion tons of iron as calculated to the depth of 800 m. The Jõhvi deposit is a complex ore body of iron and sulphide minerals and need to be further investigated.