

**Textural relationships and mineral chemistry at the Varena Iron Ore Deposit, S Lithuania: rock-fluid interactions during the metamorphism and metasomatism of calcareous and silicic rocks**

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The Varena Iron Ore deposit in the crystalline basement of western East European Craton, S Lithuania, is situated predominantly in former dolostones, that accumulated in a shelf environment along an earlier, established after ca. 1.84 Ga (Bogdanova et al., 2015), continental margin. They were pure dolostones or contained variable amounts of cherts or clastic sediments.

During the rock and mineral studies by SEM and EMPA approaches, high-grade skarns (forsterite, enstatite, spinel and diopside) produced in a closed system during metamorphism at 750° C and 5-6 kbar were distinguished. The  $X_{CO_2}$  concentrations, proximity to a contact with alumina-silicate rocks and silica, magnesium and calcium transportation in circulating fluids have caused the observed zonation. They were followed by water-consuming and amphibole (tremolite, actinolite, anthophyllite etc) producing reactions during the later uplift.

Though, a part of magnetite was produced due to the high-grade reactions, most of the iron was brought at low temperatures (ca. 400-300° C) together with serpentinization and iddingsite formation.

The EMPA chemical dating of monazites at the Warsaw University put the latest limit of ca. 1.50 Ga for iron and REE mineralizations, that were contemporaneous with the abundant AMCG magmatism in S Lithuania and N Poland.

Bogdanova, S., Gorbatshev, R., Skridlaite G., Soesoo A., Taran L., D., K., 2015. Precambrian Research 259, 5-33.