

Integrated petrographic, rock-magnetic and palaeomagnetic investigation of metabasites of Western Spitsbergen

Zintegrowane badania petrograficzne, rock magnetyczne i paleomagnetyczne metabazytów zachodniego Spitsbergenu.

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Integrated petrographic, rock- magnetic and palaeomagnetic experiments were performed on two genetically different metabasites (metadolerites and metavolcanics) from Oscar II Land, Western Spitsbergen. Combined petro-magnetic analysis of separates and “whole-samples” indicated that the main ferromagnetic carriers in metadolerites are non-stoichiometric magnetites intergrowths in titanites, magnetites/maghemites occurring with metamorphic sulphides and the last group- pyrrhotites. Metavolcanics samples are rich in magnetites/maghemites and hematites in paragenesis with metamorphic minerals. There is also a small amount of low-coercivity minerals demagnetized in temperatures 150-200 °C. Such temperature range and chemical composition could be correlated with fine-grained titanomagnetite / titanomaghemite. The method of separation used in conducted investigations significantly raised the resolution of ferromagnetic mineral identification. It allowed to accurately point out ferromagnetic carriers and connect them with particular history stages of investigated rocks. Conclusions about the origin of ferromagnetic mineralization will be essential for further palaeomagnetic and petrographic interpretations of this region. Additionally, preliminary palaeomagnetic studies were conducted on metadolerite samples from vicinity of Trygghamna (Isfjorden). Further interdisciplinary investigations of metabasite rocks of Western Spitsbergen are in progress.