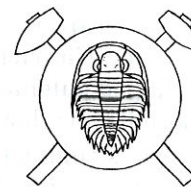


Palaeomagnetism and petromagnetism of augite microgranodiorite, Nezdice near Kašperské Hory, southern Bohemia



Paleomagnetismus a petromagnetismus augitického mikrogranodioritu, Nezdice u Kašperských Hor, jižní Čechy (Czech summary)

(6 text-figs)

MIROSLAV KRS¹ – STANISLAV VRÁNA²

¹Geologický ústav Akademie věd České republiky, Rozvojová 135, 165 00 Praha 6 – Suchbát

²Český geologický ústav, Klárov 3, 118 21 Praha 1

Submitted March 10, 1993

A non-porphyrific augite microgranodiorite, forming several dykes intruded in the Varied Group of the Moldanubian Zone, has been studied. One dyke, several metres thick, exposed at Nezdice near Kašperské Hory, southern Bohemia, provided samples suitable for petromagnetic and palaeomagnetic investigations. The remanence was found of prevailing one-component nature, the principal carrier of magnetization and palaeomagnetization is pyrrhotite. Above the Curie point of pyrrhotite, in the temperature interval of 320–390°C, a small component of remanence was found parallel to the direction of remanence of pyrrhotite, whose carrier is Ti-rich Fe-oxide. The derived palaeomagnetic pole position falls within the Carboniferous and Lower Permian pole positions so far derived on the territory of the Bohemian Massif, and most closely within the Lower Permian pole positions. The low unblocking temperature of pyrrhotite and the general trend of analyzed remanence components suggest interpretation of thermal and palaeotectonic stability of the region under investigation in the time span from the Lower Permian to the present time.

Introduction

The primary task was to derive the palaeomagnetic parameters of a microgranodiorite dyke and to interpret them in relation to analogical data on the territory of the Bohemian Massif. Out of several identified dykes of this type, a well exposed dyke 800 m NW of Nezdice near Kašperské Hory, southern Bohemia, was selected for the purpose of palaeomagnetic investigations. It is a fine-grained high-temperature rock composed of lath-shaped plagioclase, augite, and micrographic aggregates of K-feldspar and quartz. The major opaque minerals are ilmenite and pyrrhotite, magnetite being totally absent. The object of laboratory work was also to determine the minerals that are magnetization and palaeomagnetization carriers.

Briefly about geology and petrography

Several dykes of augite microgranodiorite occur in the region between Strakonice and Sušice, southern Bohemia, as minor intrusions in the Varied Group of the Moldanubian Zone. All the dykes are localized in a circular area, 18 km in diameter, featuring elevated land surface morphology on the NE erosional slope of the Bohemian Forest (Šumava) Mts. Morphological forms and data from airborne magnetometry indicate that the elevated "central uplift" represents the

centre of a circular structure 50 km in diameter. The existence of this structure was inferred earlier from the regional magnetometry (Šalanský 1987) and from satellite photographs (Dornič and Šťovíčková 1984).

The augite microgranodiorite dykes are several metres thick and show a fine-grained to aphanitic fabric. Amygdaloidal types, with former vesicles 5 to 10 mm in diameter, filled with calcite, chlorite, quartz ± K-feldspar and pyrite, as well as amygdale-free type are present. The studied dyke, exposed 800 m NW of Nezdice, belongs to the latter type. The rocks are non-porphyrific, have a subophitic structure dominated by lath-shaped plagioclase and augite. Potassium feldspar-quartz micrographic intergrowth fills the interstices between plagioclase crystals. Secondary chlorite, sericite, prehnite, actinolite, titanite, and calcite crystallized in small amounts during a late, autohydrothermal stage. Quartz and gneiss clasts amounting to less than 5 vol. % are notable. Quartz clasts show augite-K-feldspar reaction rims, quartzofeldspathic clasts exhibit total melting of feldspars; this melt solidified as glass which later devitrified to skeletal crystals.

Opaque minerals identified by means of reflected light microscopy and microprobe analyses include ilmenite and pyrrhotite plus rare