Magnetic Fabric in Granitoid Plutons of the Jeseníky Mts. and Timing of their Intrusions

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The bulk magnetic susceptibility of the rocks of the •ulová pluton is relatively homogeneous and low, in the order of 10–5 to 10–4 (SI of units is used). This low susceptibility implies that the magnetic fabric is probably controlled by paramagnetic silicates (biotite and ± hornblende), even though minor effects of magnetite cannot be excluded. The anisotropy degree is relatively low, P<1.05 in the most specimens. The magnetic fabric is very variable, ranging from clearly linear to clearly planar. The magnetic foliations of the most specimens are flat, the magnetic lineations are mostly sub-horizontal, predominantly oriented NW-SE, i.e. virtually perpendicular to those in the neighbouring areas of the Rychlebské hory Mts. and the Hrubý Jeseník Mts. These AMS features imply that the magnetic fabric of the •ulová pluton is intrusive in origin not affected by the tectonic movements that formed the structures of the Rychlebské hory Mts. and the Hrubý Jeseník Mts.

The bulk susceptibility of the Šumperk granodiorite is very variable, ranging from the order of 10–4 to the order of 10–2. In strongly magnetic specimens, the magnetic fabric is dominantly controlled by magnetite, while in weakly magnetic specimens it is also controlled by paramagnetic silicates (biotite). The anisotropy degree is relatively high and the magnetic fabric is clearly linear. Such a magnetic fabric is rare in granitic rocks where planar magnetic fabrics are very frequent. The magnetic lineations are very well concentrated along its mean direction, being oriented WSW-ENE and plunging WSW 10° to 20°. The magnetic foliation poles are concentrated less perfectly, but still relatively well, moderately plunging SW. The magnetic fabric conforms to that of phyllonite and metagranite surrounding the Šumperk granodiorite and having no doubt deformational fabric. Consequently, the magnetic fabric of the Šumperk granodiorite was controlled by principally the same processes as those controlling the origin of the magnetic fabric in the phyllonite and metagranite, i.e. ductile deformation.

The bulk susceptibility of the Javorník granodiorite is relatively homogeneous and low, in the order of 10–5 to 10–4, implying that the magnetic fabric is probably controlled by paramagnetic silicates (biotite and ± hornblende), even though minor effects of magnetite cannot be excluded. The anisotropy degree is moderate, 1.05<P<1.12 in the most specimens. The magnetic fabric is mostly planar. The magnetic foliation poles of the most specimens create a cluster gently plunging SE. The magnetic lineations are predominantly oriented NE-SW, i.e. virtually parallel to those in the metamorphic rocks of the Rychlebské hory Mts. and the Hrubý Jeseník Mts. These AMS features imply that the magnetic fabric of the Javorník granodiorite is deformational in origin, affected by the tectonic movements that formed the structures of the Rychlebské hory Mts. and the Hrubý Jeseník Mts.

The re-evaluation of chemical analyses has confirmed the rock classification (the CaO-Na2O-K2O diagram) as granodiorite, revealed a meta-aluminious rock composition (ASI) with exception of the Javorník granodiorite and suggested that all granodiorites belong to the I-type. While the granodiorites are similar in the major element chemistry, trace element composition indicate a light difference. In addition, a difference exists in the REE-distribution. AMS of the •ulová pluton, Javorník granodiorite and Šumperk granodiorite indicate that they must have intruded the metamorphic rocks in different times. While the Javorník granodiorite and the Šumperk granodiorite were emplaced before the deformation phase that formed the magnetic fabric in metamorphic rocks, the granitoids of the •ulová pluton are unaffected by this deformation and should be be younger.

Generalized Angelier-Mechler's/Arthaud's Method

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During the last 20 years, numerical methods of paleostress reconstructions were fairly developed, but no or little progress in graphical methods was recorded, However modern computers and softwere enable good graphic presentation of data. Merit of graphical methods is illustrative relation between data and results. Two basic graphical methods include right dihedra meth-