A study of magnetic properties and magnetic mineralogy of the Neogene volcanic and volcano-sedimentary rocks from central Slovakia

O. Orlický
Geophysical Institute of the Slovak Academy of Sciences[1]

A b s t r a c t: A study of the Badenian and the Sarmatian volcano-sedimentary rocks from southern parts of the Štiavnica stratovolcano was performed. The rocks contain mostly the titanomagnetites (Ti-Mt), the ilmenite-hematites (Ilm-Hem) and the titanomaghemites (Ti-Mgh). In the solid andesites the Fe-Ti oxides were formed simultaneously with the forming and cooling of the magmatic body and the thermoremanent magnetization (TRM), or partial thermoremanent magnetization (PTRM) were acquired in the rocks. The grains of magnetic minerals of the sedimentary rocks come from the desintegrated previously existing volcanic bodies. They were transported into the sedimentary basin and dominantly the chemical remanent magnetization (CRM), rarely the detrital remanent magnetization (DRM), is preserved in the sedimentary rocks. The RM of both, the glassy pyroxene - feldsparphyric-leucocrate thin andesite lava flows and the pumice tuffs with the reversed polarity lying within the strata of the Baďan formation are of the low intensity PTRM origin. The PTRM of the pumice tuffs was acquired due to their heating by hot thin layers of the andesite lava flows within the ambient normal geomagnetic field. The reversed PTRM (the reversed inclination and mostly normal declination of PTRM) of both these types of rocks is of non-complete self-reversal origin. The pumice tuffs from the Čankov locality (No. 12), the sandstone pumice tuffs, including the hyaloclastite breccias from the Žemberovce localities (No. 6, 6a, 7), all from the Baďan formation (of the Sarmatian age, like other tuffs of the reversed PTRM) have normal RM, probably of the CRM origin. The sequences at these localities do not contain the glassy pyroxene - feldsparphyric-leucocrate andesite lava sheets. The RM of the ignimbrites of the Drastvica formation is of the reversed self-reversal TRM origin, combined with the CRM. The sandstones from 4 localities and the conglomerates of 1 locality, all from the Sebechleby formation (the Badenian age) do have the RM of normal polarity, probably of the CRM origin. The rocks having the TRM or PTRM origin of the RM, have the reversed polarity, but the rocks containing the CRM or the DRM have normal RM. The shallow reversed inclination of RM of andesitic rocks of the Baďan formation, including the ignimbrites of the Drastvica formation have supported an idea that the volcanic bodies

[1]Dúbravská cesta 9, 845 28 Bratislava, Slovak Republic
e-mail: geoforky@savba.sk

of the Baďan and the Drastvica formations have tilted to the S (according to our results about 8–30°), during the consolidation of the area.

Key words: Baďan formation - pumice tuffs, glassy pyroxene andesites, Drastvica formations - ignimbrites - self-reversal PTRM and TRM; Sebechleby formation - sandstones, conglomerates - normal polarity of CRM origin