

A realistic interpretation of magnetic and paleomagnetic data: A study of basalts from Southern Slovakia

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Abstract: Basaltic rocks of the Pleistocene to Quaternary age from 38 localities from volcanic fields of southern Slovakia were studied. Except of the Curie temperature measurements of Fe-Ti oxides and the thermal demagnetization tests, also the hysteresis properties of selected samples of basalts were investigated. The basalts from 33 localities (87 %) were reversely magnetized, basalts from only 5 localities acquired originally normal remanent magnetic polarization (RMP). A very soft selection of magnetic phases has allowed to categorize the basalts into 6 groups with different magnetic properties and direction of RMP. The results have lead to the suggestion that the reversed RMP of basalts is a consequence of the self-reversal process acting during the magnetization of cooling rocks in the normal polarity geomagnetic field. Some basalts of originally reversed RM were re-heated during repeated volcanic activity, and they were remagnetized. They acquired either normal polarity of the RMP, or they attained extremely anomalous directions of the RMP.

Key words: softly differentiated Fe-Ti magnetic phases, self-reversal RMP, remagnetized basalts

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