

An intricate magnetization of volcanics containing the Ti-rich titanomagnetites: Problematic application of the Thellier method

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Abstract: The results have shown that the basalts with Ti-rich Ti-Mt-es do not possess the magnetically stable component to determine the paleointensity. The Ti-rich titanomagnetites behave dominantly as small magnetic particles, very close to superparamagnetic state. These magnetic minerals do not have thermodynamically stable domain structures. The exchange coupling state dominates over all other interaction mechanisms in small magnetic particles in the Ti-rich Ti-Mt bearing rocks. So, the flower state and the vortex state are dominant magnetization processes in these type of Ti-Mt bearing rocks.

On the other hand, if there are rocks with unaltered Fe-Ti magnetic minerals with Fe-rich Ti-Mt-es with well-developed domain structures, the magnetization by the irreversible domain wall movement is actual and so, there is a good magnetic and paleomagnetic stability of RM and there is a chance to derive the corresponding paleointensity of the rocks.

Key words: Ti-rich titanomagnetite bearing basalts, Fe-rich Ti-Mt bearing young altered biotite hornblende pyroxene andesites, paleointensity

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