The Fe-Ti magnetic phases in young volcanics from various places of the Globe (Part IX)

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A b s t r a c t : The Fe-Ti magnetic phases, especially the most oxidized ones, of young basaltic, andesitic and dacitic rocks from Greece, Italy, Japan, Philippines, and the U.S.A., were studied. The results have shown that the most oxidized Fe-Ti magnetic phases of basaltic rocks are in the range of the Curie temperatures $T_C \approx 510$–$565\,^\circ$C, the andesites, dacites rhyo-dacites, rhyolites have the most oxidized Fe-Ti magnetic phases in the range $T_C \approx 420$ to $565\,^\circ$C. No one sample contains magnetic phases with the Curie temperature over $570\,^\circ$C. In the young volcanics there is still small amount of the most oxidized phases with the Curie temperatures only less than $570\,^\circ$C. The older rocks of the Quaternary-Neogene age from all volcanic fields of Slovakia do contain the most oxidized magnetic phases, in average of about 45 to $50\,^\circ$C higher Curie temperatures than those of young volcanics under study. These results are of very high importance from the paleomagnetic point of view due to the fact, that the most oxidized Fe-Ti magnetic phases are the carriers of the secondary remanent magnetization of the chemical (CRM) origin with a stability comparable with that of the thermo-remanent magnetization (TRM) of the respective rocks. The second very important piece of knowledge is that we can deduce that there is no higher oxygen fugacity in fresh basaltic, andesitic or rhyolite magmas,

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which could generate the Ti-Mt, Ilm-Hem, or other Fe-Ti magnetic phases of higher Curie temperatures, only equal to or lower than $T_C \approx 570\,^{\circ}C$.

Key words: the young volcanics – basalts, andesites, dacites, rhyodacites, the most oxidized Fe-Ti magnetic phases of the $T_C \approx 420$ to $565\,^{\circ}C$, rock magnetism, palaeomagnetism