

Magnetic mineralogy of Variscan granites: relation to its metallogenic potential on rare metals

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The Lamas de Olo Pluton (LOP) is a late to post-orogenic massif located in the Northern part of Central-Iberian Zone from Iberian Variscan belt. The LOP is a composite body constituted by different granite facies. The area belongs to the “Northern mineralogenic province”, where W-Mo-(Sn) occurrences are present [1]. Previous magnetic susceptibility (MS) measurements pointed out the presence of two types of granites: magnetite- and ilmenite-type granites [2]. In order to identify different ferromagnetic contributions, complementary thermo-magnetic experiments were performed in a low field CS-2 furnace attached to the KLY-3 susceptometer. Two different kind of curves were obtained: (A) showing a significant fall of MS at 580°C, indicating the Curie temperature of magnetite; (B) showing a regularly decreasing of MS with increasing temperature, typical of a paramagnetic behaviour (Fig. 1). These results confirms the existence of granites with magnetite and ilmenite, respectively.

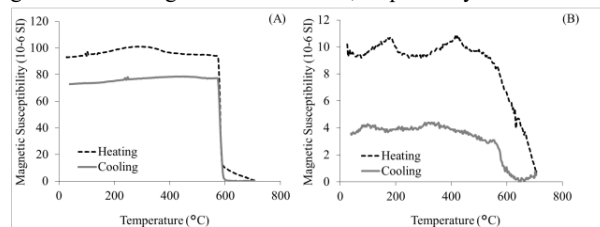


Figure 1: Normalized magnetic susceptibility curves for continuously increasing (and decreasing) temperatures.

The different magnetic behaviours, suggested different redox conditions in the magma genesis which controls the nature of many ore elements [3]. The presence of magnetite in LOP reflects melt oxidized conditions, which can play an important role on the genesis of W (Mo) mineralizations.

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[1] Thadeu (1965) *Carta Mineraria de Portugal*; [2] Cruz et al. (2016) *SGEM*, 345-352; [3] Ishihara (1977), *Min. Geology*, 27, 292-305.