

FE-TI-V-P DEPOSITS IN ANORTHOSITES COMPLEXES: THE BEARING OF PARENTAL MAGMA COMPOSITION AND CRYSTALLIZATION CONDITIONS ON THE ECONOMIC VALUE.

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Recent experimental (Vander Auwera and Longhi, 1994; Vander Auwera et al., 1998; Longhi et al., 1999) data indicate that parental magmas of the AMCG suite encompass a significant geochemical variability. Those related to Fe-Ti mineralization probably range from high-alumina basalt to Fe-Ti-P-rich monzodiorite (jotunite). Both magmas can account for the norite series which fractionates at 3-5 kb to silica-enriched liquids. Their relationship is still debated though, in Rogaland, they produce massif-type anorthosites and layered anorthosite intrusions with Fe-Ti-V-P deposits (Duchesne, 1999). In massive anorthosites, the ore-bodies occur as (deformed) dykes or pods ranging in composition from pure ilmenite (Jerneld) to ilmenite norite (Tellnes, Storgangen). Polybaric fractional crystallization and synemplacement deformation in rising anorthosite diapirs lead to relatively (poisonous) Mg- and Cr-rich ilmenite (\pm V-magnetite) deposits. Fractional crystallization in layered magma chambers of jotunite magmas gives rise to voluminous « disseminated » mineralizations, containing low Mg and Cr ilmenite + Ti-magnetite \pm REE-rich apatite, still of sub-economic value. Immiscibility is not the controlling mechanism, except maybe in some rare nelsonites (Hesnes).References Duchesne, J.C., 1999. Miner. Deposita, 34, 182-198. Longhi, J., Vander Auwera, J., Fram, M. and Duchesne, J.C., 1999. J. Petrol., 40, 339-362. Vander Auwera, J. and Longhi, J., 1994. Contrib. Miner. Petrol., 118, 60-78. Vander Auwera, J., Longhi, J. and Duchesne, J.C., 1998. J. Petrol., 39, 439-468.