

Minor element chemistry of hemo-ilmenite and magnetite in cumulate rocks from the Sokndal Region, South Rogaland, Norway

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ABSTRACT

Chemistry of the Fe-Ti oxide minerals in the Bjerkreim-Sokndal layered intrusion and in the Tellnes Ilmenite Norite suggests some parallels in magmatic evolution and resultant petrography. Early ilmenites have high ratios of Mg/(Mg + Fe) and Cr/R³⁺ and intermediate to low V/R³⁺, and abundant fine hematite exsolution lamellae, in which Cr, V, and Al are concentrated. Magmatic evolution results in lower Mg/(Mg + Fe), lower Cr/R³⁺ and higher V/R³⁺. With magma saturation with magnetite, V/R³⁺ falls both in ilmenite of rapidly decreasing abundance, and in magnetite, but there is an increase in Mg/(Mg + Fe) of ilmenite, probably due to late ion exchange with much more abundant magnetite. Aside from implications related to magma evolution, these results give information concerning fractionation of elements between the rhombohedral and cubic oxide series, and especially between the ilmenite hosts and their contained hematite exsolution lamellae.