Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03492, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03492
EGU General Assembly 2008

The use of HT-XRD and TGA-EGA for complementary characterization on chromites

M.P. Gomez-Tena, M.F. Gazulla, E. Zumaquero, C. Machi

Instituto de Tecnología Cerámica. Asociación de Investigación de las Industrias Cerámicas. Universitat Jaume I, Castellón, Spain (pilar.gomez@itc.uji.es / Fax: +34 964342425)

Chromium oxide (Cr_2O_3) and silicon oxide (SiO_2) content is used extensively for chromite ore grade classification. Nevertheless the mineralogical properties, which pose a major limitation in utilising a wide variety of chemical chromite ores from different origins, determine the yield of application. Given that in most cases, this application involve a thermal treatment (metallurgy, produce chemicals, refractories or pigments), a further investigation on the behaviour of this material during a controlled thermal process has been considered.

The aim of this presentation is to show how the combination of in situ high-temperature-X-ray diffraction (HT-XRD), TGA-evolved gas analysis (TGA-EGA) (i.e. mass spectrometry (MS) and Fourier transform infrared spectroscopy (FTIR) on-line coupled to TGA) gives complementary information for a complete identification of the intermediates that are formed during thermal decomposition.

By using TGA-EGA, these intermediates can be determined indirectly by calculation from the weight losses or by the identification of the evolved gasses. Direct information about the intermediates and the final decomposition products can be obtained by in situ high-temperature-X-ray diffraction (HT-XRD).

Two reference materials (BCS-CRM 370 and BCS-CRM-308 (Grecian Chrome Ore)) and one chromite ore from Kazakhstan were investigated.