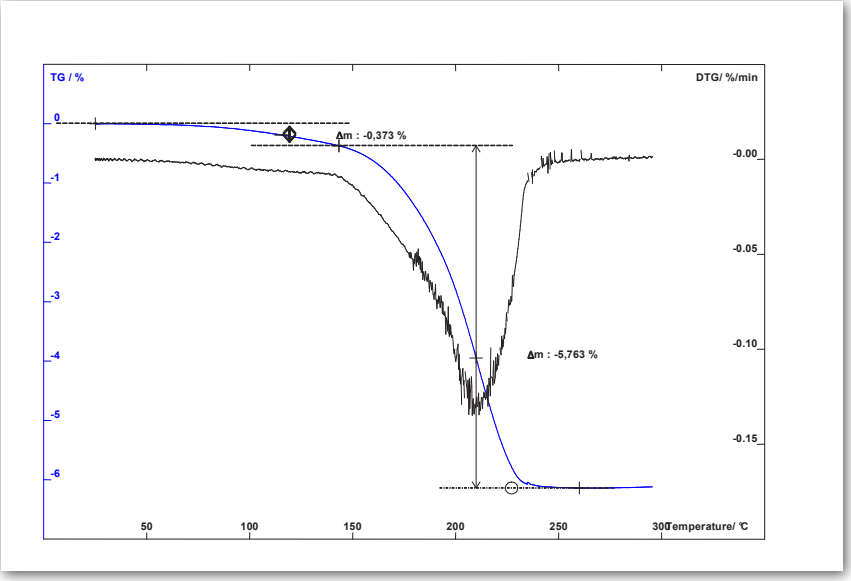
Analysis of plaster with large volume TGA

INTRODUCTION

Large volume thermogravimetry may be of great interest, because it makes possible the analysis of non-homogeneous samples. It is especially interesting in the case of natural raw materials or ores, because with a larger sample size, the sampling becomes less critical.
Using large volumes is also a way to obtain more accurate measurements : it can be especially interesting if the mass variation is less than 1%.
With the THEMYS LV, it is possible to use crucibles with a volume of 18 mL. (diameter = 22 mm, height = 50 mm)



EXPERIMENT

- A sample of plaster was analyzed in TGA mode .
- Sample mass : 13.35 g
- The temperature was programmed from ambient to 300°C at 1 K/min.
- Atmosphere : air

RESULTS AND CONCLUSION

The figure shows that we can separate the mass loss in two steps : between ambient and 145°C : a mass loss of 0.373 % is measured : it is due to the dehydration of gypsum.
Between 145°C and 250°C : a mass loss of 5.763 % is measured. It is due to the dehydration of plaster.

INSTRUMENT

THEMYS LV TGA

EXTERNAL COUPLING CAPABILITY
designed for evolved gas analyzers (FTIR, MS, GCMS, MSFTIR, or FTIR-GCMS)

ULTRA-HIGH TEMPERATURE CAPABILITY
to 2000°C with a single furnace.

MODULAR ADAPTIONS ALLOWING
TGA only, DTA only, TG-DTA up to 2000°C, High temperature calorimetry up to 1600°C all in one instrument

HIGH ACCURACY & VERSATILITY
hang-down symmetrical beam balance, specifically designed for TGA applications

ACCURATE AND SENSITIVE ULTRA-HIGH TEMPERATURE
heat flow measurement with Tri- Couple DTA technology