

Phase transitions and melting of iron

INTRODUCTION

Improvement of metal and alloy properties may come from a better control over their structure. For this you can benefit from phase diagrams. DTA or DSC directly measure characteristic temperatures of a phase diagram.

EXPERIMENT

Instrument : THEMYS ONE

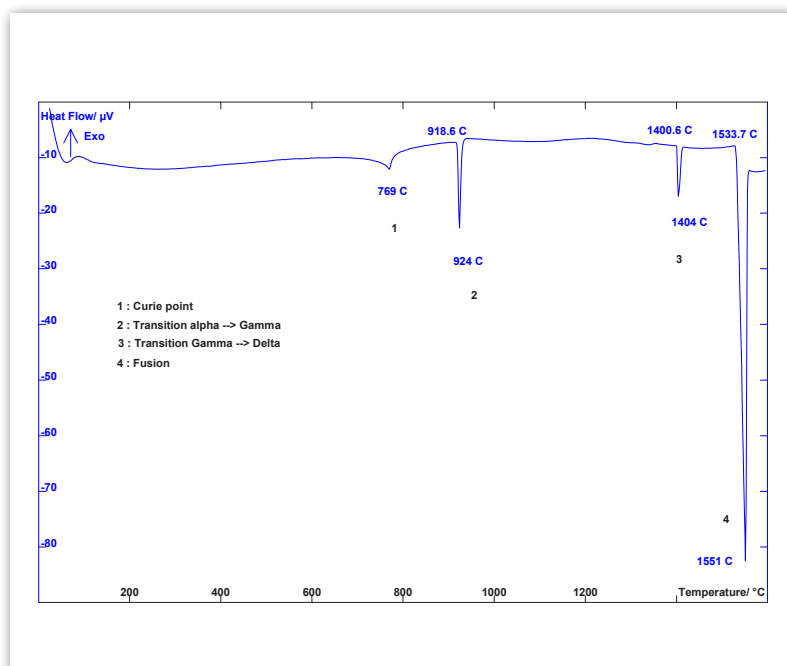
Sample : iron

Sample mass : 229.59 mg

Crucible : alumina

Atmosphere : Argon

The temperature was programmed from 20°C up to 1600°C at 10 K/min.



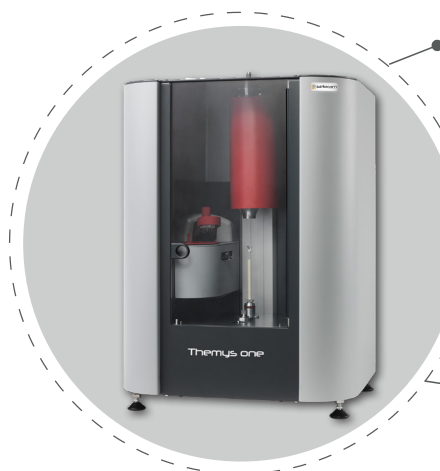
RESULTS AND CONCLUSION

Different events may be observed during heating :

1. at 769°C : curie point (magnetic transition)
2. at 924°C : $\alpha \rightarrow \gamma$ transition
3. at 1400.6°C $\gamma \rightarrow \delta$ transition
4. at 1533.7°C : melting of iron

INSTRUMENT

THEMYS ONE



HIGH SENSITIVITY BALANCE FOR THE DETECTION OF SMALL MASS VARIATIONS specifically designed for TGA analysis.

CONVENIENCE OF ONE FURNACE to reach temperatures as high as **1150°C or 1600°C**.

PLUG AND PLAY INTERCHANGEABLE RODS to perform TGA only, TG-DSC, TG-DTA, and 3D high sensitivity/Cp measurements.

EXTERNAL COUPLING CAPABILITY including evolved gas analysers