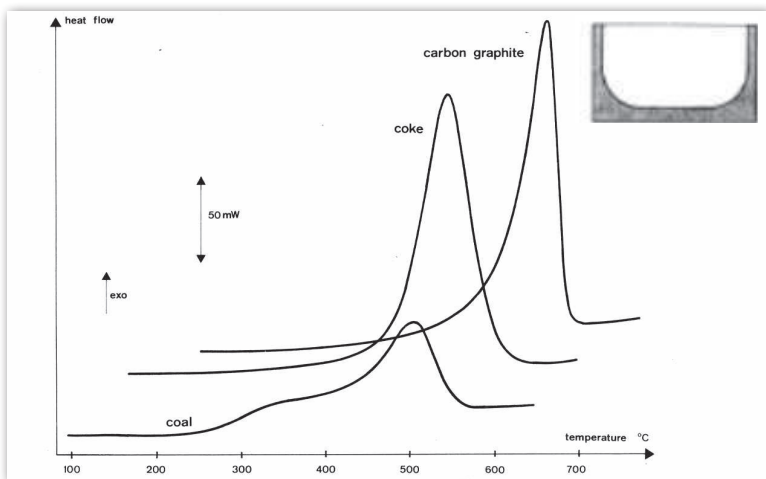


Combustion of carboneous products

INTRODUCTION

Coal is particularly characterized by its calorific value which essentially depends on its carbon and volatile contents. The combustion of coal occurs on a wide range of temperature (from 200°C up to 600°C). Coke, which is a high carbon content product, burns at higher temperature, with only a step of combustion. Carbon graphite is an ideal case of combustion, the reaction yielding only water and carbon dioxide.



EXPERIMENT

- Samples :
- Coal (Sète, France) : 2.85 mg
- Coke : 3.86 mg
- Carbon graphite : 2.53 mg
- Crucible : open alumina boat
- Atmosphere : oxygen (1.7 liter/hour)
- Heating mode : 10 K/min

RESULTS AND CONCLUSION

According to the carboneous products investigated, the temperature ranges of combustion are different :

- coal : 200°C – 600°C
- coke : 400°C – 650°C
- carbon graphite: 500°C – 750°C

The calorific values are also different :

- coal (Sète): 5540 cal.g⁻¹
- coke : 7310 cal.g⁻¹
- carbon graphite: 7575 cal.g⁻¹

INSTRUMENT

CALVET PRO DSC

-120 to 830°C



- HIGHEST HEAT MEASUREMENT ACCURACY**
3D sensor based on thermocouples with Joule effect calibration.
- EXTERNAL COUPLING CAPABILITY**
- CONVENIENT INTERCHANGEABLE CRUCIBLES AND CELLS**
to perform even the most demanding experiments using one instrument :
 - high pressure (1000bar) and high vacuum
 - pressure measurement and control
 - mixing experiment