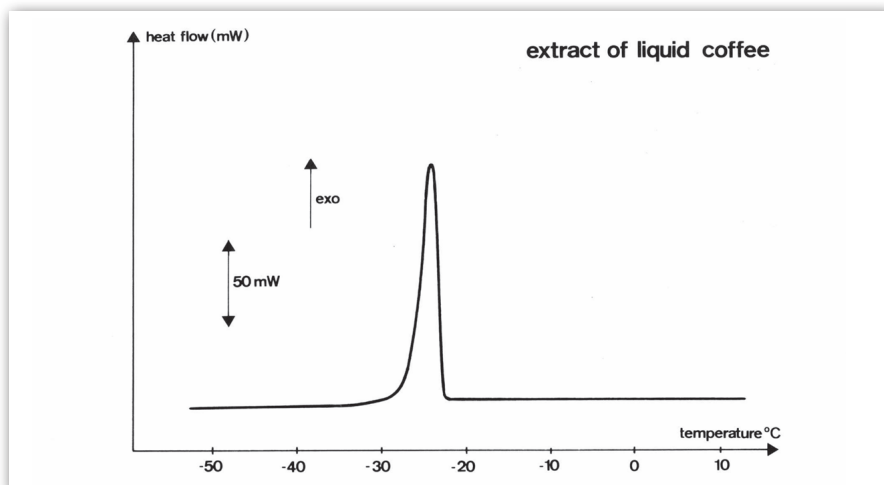


Freezing of an extract of liquid coffee

INTRODUCTION

For the frozen products, the DSC method can provide four different characteristics : the temperature at the beginning of freezing (especially for the solutions), the amount of ice vs temperature, the temperature at the beginning of melting, the detection of recrystallization.

The temperature at the beginning of freezing is especially interesting for industrial operations. Moreover, it defines the temperature range for freeze drying operations. In the present example, the temperature of freezing of an extract of liquid coffee is measured.



EXPERIMENT

Sample : Extract of liquid coffee
 Mass : 150.6 mg
 Crucible : Stainless steel
 Cooling : 2 K/min
 The sample was cooled from room temperature down to -50°C .

RESULTS AND CONCLUSION

Freezing starts at around -23°C . The integration of the peak provides the heat of freezing (66.88 J/g). It allows the amount of ice to be determined by comparison with the heat of freezing of water. Some supercooling effects can appear when cooling the sample. Before starting the freeze-drying of a new product, determining the temperature at the beginning of melting is of interest for knowing the temperature range over which the water is fully frozen.

INSTRUMENT

CALVET PRO

-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