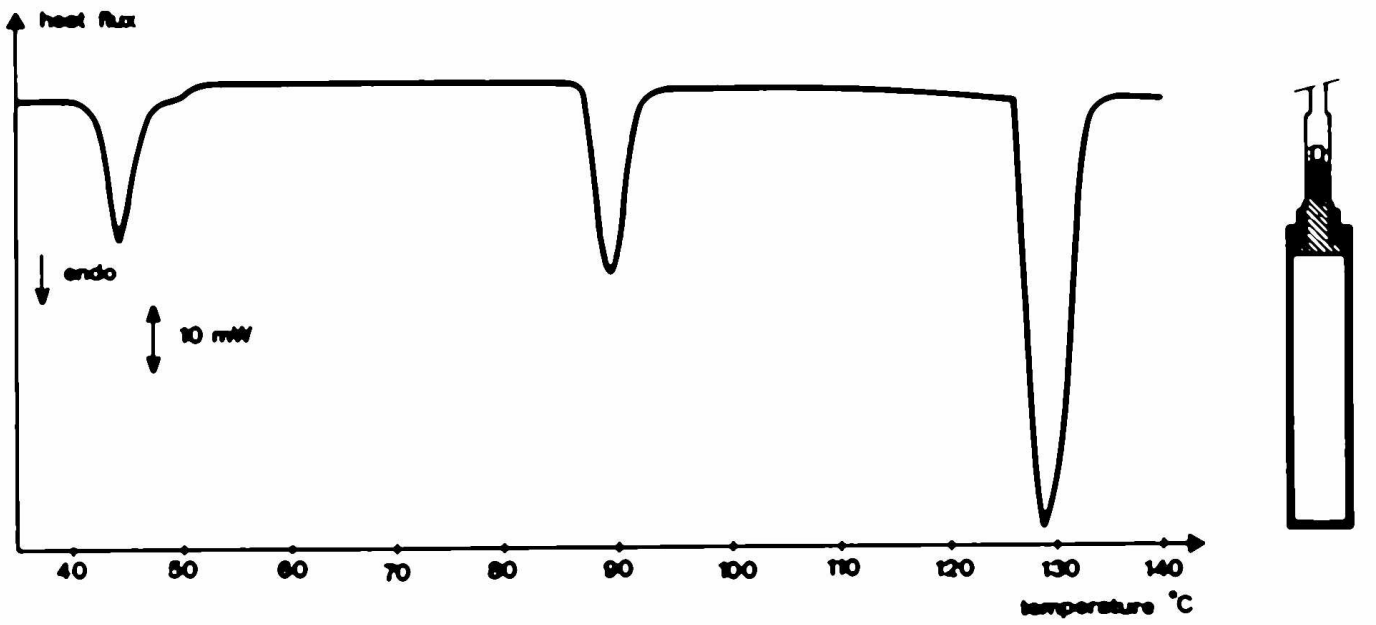
Transitions : Ammonium Nitrate

Introduction

The temperature range of the C80 calorimeter is large enough to investigate some phase changes or transitions in materials. The experimentations are run on large amounts of sample, with low heating rates. That gives precise quantitative measures, and solves also the problem of sampling for some inhomogeneous materials.
Using a standard vessel, a sample of ammonium nitrate is heated at 0.2K.min^{-1} for detecting different characteristic transitions.



Experimental

Sample : Ammonium nitrate $NH_4 NO_3$
Mass : 1.577 g
Vessel : standard vessel
Heating mode : 0.2 K.min^{-1}

Results

When heating a sample of NH_4NO_3 from ambient up to 150℃, three distinct transitions are detected :
-the first one at 44.8℃ with a shoulder (Q1 = 3.25 cal.g^{-1})
- the second one at 89.5℃ (Q2=3.93 cal.g^{-1})
- the third one at 128.5℃ (Q3=12.30 cal.g^{-1})

Instrument

C80

Ambient up to 300℃