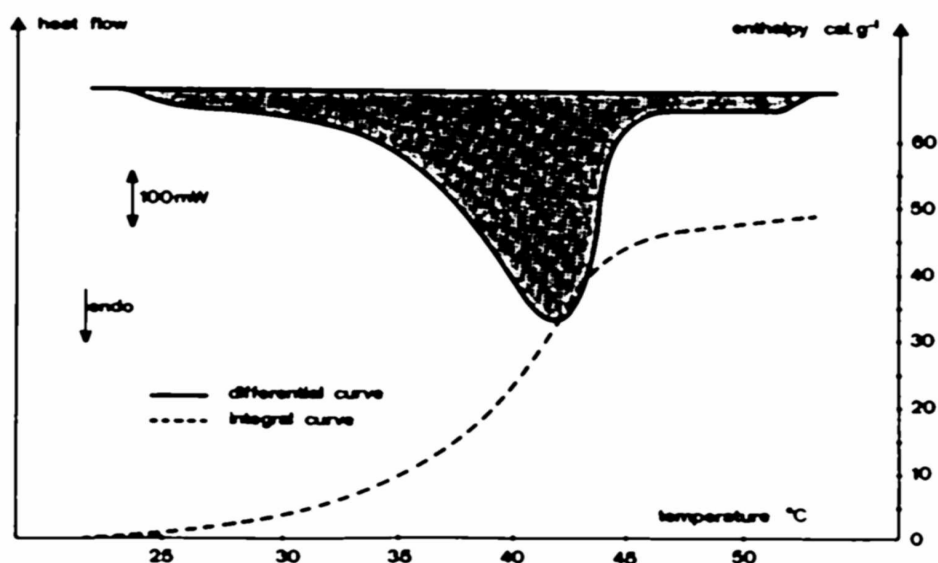


Melting : hydrated ferric chloride $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$

Introduction: The latent heat is the energy evolved by a material when it undergoes to a structure change. The effective storage of this heat requires the use of materials with large melting heat, which can be recovered during solidification. For latent heat storage below 130°C , hydrated salts are frequently used. Mostly they are tightly encapsulated in order to prevent evaporation or contamination of the material.

A glass ampoule containing a large amount of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ is placed in a standard vessel, and the melting of the hydrated salt is easily investigated.



Experimental

- Sample : $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$
- Mass : 10.294 g
- Vessel : standard vessel with the sample contained in a sealed ampoule
- Heating mode : scanning 0.1 K.min^{-1}

Conclusion

- The melting of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ occurs between 30°C and 47°C , which is suitable range of temperature for energy storage systems.
- The integral curve, which takes in account the heat capacity of the sample and its heat of melting, gives the quantity of heat that can be stored for defined range of temperature.
- In the case of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ the amount of heat stored between 20°C and 50°C is equal to 48 cal.g^{-1}



Instrument C80
from RT to 300°C