

## About the Transition of n-Alkanes Above the Melting Point Comment to the Paper by P. Claudy and J.M. L  toff  

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CLAUDY and L  TOFF   (this issue) have investigated the thermal behaviour of some n-alkanes by means of differential scanning calorimetry (DSC). In the discussion of their results they refer to some of our results (PIETRALLA and KR  GER 1980, H  HNE 1981) on the same subject. They refer to

- i) a transformation like behaviour of n-alkanes at a transition temperature designated as  $T_u$  (PIETRALLA and KR  GER 1980, KR  GER et al. 1979, 1980, 1981a,b)
- ii) an exothermic peak in the DSC diagram well above  $T_u$  (H  HNE 1981)

The two effects i) and ii) should be well distinguished as was already pointed out by H  HNE (1981). We believe that the explanation of CLAUDY and L  TOFF   concerning the exothermic DSC peak above about 420 K is correct. On the other hand the fact that they, like H  HNE (1981) have not observed any effects at  $T_u$  is no proof for the non-existence of a transition phenomenon at  $T_u$ :

- all Brillouin-experiments on n-alkanes (KR  GER et al. (1979, 1980, 1981a,b) were performed under a  $N_2$  or a He atmosphere, therefore oxydation effects could be excluded.
- The Brillouin- and viscosimetric experiments were performed on sample quantities which are large compared to those used by CLAUDY and L  TOFF   (typical 300 mg for Brillouin- and several grams for viscosimetric experiments.

- The effects at  $T_u$  are thermoreversible.
- The appearance of the oxydation induced DSC peaks has not the same molecular weight dependence as  $T_u$  (CLAUDY and LÉTOFFÉ this issue, PIETRALLA and KRÜGER 1980).
- It is well known that at a phase transition the specific heat can be only slightly affected although the transition is strongly reflected by other physical properties. Such a behaviour is e.g. observed for the phase transition into the ferroelectric phase of  $Pb_5-Ge_3O_{11}$  at  $T_c = 178^\circ C$ . Whereas the dielectric constant along the crystallographic c-direction varies from 40 to 2000 near  $T_c$  (LANDOLT-BÖRNSTEIN 1981) an effect in the specific heat is unresolvable in a classical DTA- or DSC-experiment (ALBERS 1982, NASSAU et al. 1977).

We believe the explanation given by CLAUDY and LÉTOFFÉ for the high temperature exothermic peak of first DSC-runs of n-alkanes is correct but it is obvious that their results do not contradict our explanation of the origin of  $T_u$ . Finally it should be mentioned that  $T_u$  of  $C_{24}H_{50}$  was recently found also in the behaviour of the specific volume (GROSSMANN et al. 1982).

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