

Note

Comments on "heats of melting of sodium nitrate and indium by differential scanning calorimetry: a suggestion for a new calibration substance"

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It is suggested that NaNO_3 is a poor choice as calibration material for scanning calorimetry. First, it is somewhat hygroscopic, a property that could cause significant error in weighing out the very small sample (maximum 7 mg) required by the DSCII. Second, sodium nitrate exhibits a solid–solid phase change about 30 K below the melting point. Depending on the rate of heating or cooling, this phase change may or may not be observed. Obviously) Lowings et al.¹ did not observe it. It is relevant to note that their value for the heat of fusion ($\Delta h_f = 3615 \pm 50 \text{ cal mole}^{-1}$) roughly corresponds to the $3694 \pm 182 \text{ cal mole}^{-1}$ found by Janz et al.² for the total heat of fusion at 581 K ($\Delta h_f = 3520 \text{ cal mole}^{-1}$, plus heat of solid transformation at 550 K ($\Delta h_{tr} = 174 \text{ cal mole}^{-1}$).

In some simple drop calorimetry performed recently, we, also, have found evidence for a solid–solid phase change at about 550 K. While we would be reluctant to attach an accuracy to our value of $\Delta h_{tr} = 310 \text{ cal mole}^{-1}$, we feel that our observations have generally confirmed those of Janz et al.² concerning the existence of this transformation.

REFERENCES

- 1 M. G. Lowings, K. G. McCurdy and L. G. Hepler, *Thermochim. Acta*, 23 (1978) 365–370.
- 2 G. J. Janz, F. J. Kelly and J. L. Pérono, *J. Chem. Eng. Data*, 9 (1964) 133.