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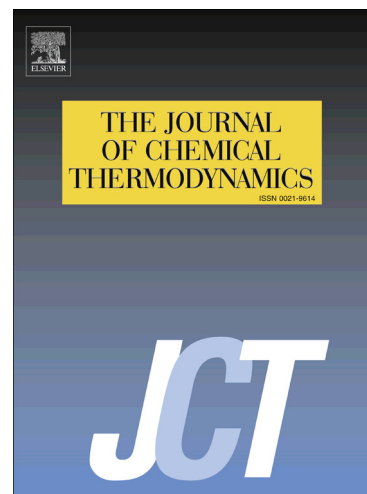
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New aspects of relationship between the enthalpies of fusion of aromatic compounds at the melting temperature and the enthalpies of solution in benzene at 298.15 K. Part II

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Abstract

In the present work we demonstrate how the relationship between fusion enthalpies at the melting temperature of aromatic compounds and solution enthalpy values in benzene at 298.15 K values is affected by the fusion enthalpy temperature dependence and the solution enthalpy of hypothetical liquid in benzene. The fusion enthalpies at 298.15 K were independently calculated from the solution enthalpies in benzene and the fusion enthalpies at the melting temperatures according to Kirchhoff's law. Kirchhoff's law was applied for fusion enthalpy adjustment calculation, assuming that the heat capacities of the aromatic compounds studied in the molten state can be extrapolated down to 298.15 K. The fusion enthalpies at 298.15 K derived from the solution calorimetry and from the fusion enthalpies at the melting temperatures are in good agreement, including the compounds with significant fusion enthalpy adjustments, demonstrating the validity of the assumptions made.

The solution enthalpies of six aromatic compounds in benzene and the fusion enthalpy of dimethyl terephthalate were measured.

Keywords: fusion enthalpy; solution enthalpy; aromatic compounds; heat capacity

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