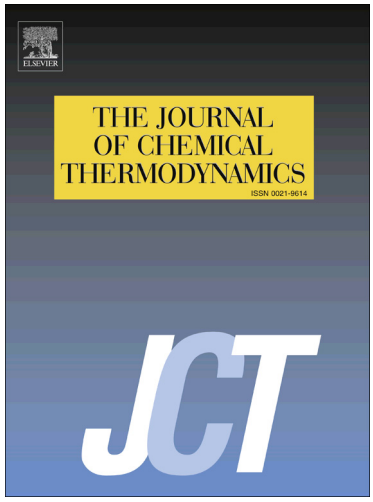

Thermodynamic and thermal properties of the C_{60}-L-lysine derivative

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Thermodynamic and thermal properties of the C_{60}-L-lysine derivative

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Abstract

In the present research, the low-temperature molar heat capacity, $C_{p,\mathrm{m}}°$, of C_{60} – L-lysine derivative was measured using adiabatic calorimetry from T = 13 K to T = 326 K. The respective molar third law entropy at T = 298.15 K, $S_\mathrm{m}°$, was calculated giving (1110 ± 3) $\mathrm{J{\cdot}K^{-1}{\cdot}mol^{-1}}$ for C_{60} – L-lysine derivative. Smoothed $C_{p,\mathrm{m}}°(T)$ values between $T \rightarrow 0$ K and 320 K are presented along with the values for $S_\mathrm{m}°$ and the functions $[H_\mathrm{m}°(T) - H_\mathrm{m}°(0)]$ and $[G_\mathrm{m}°(T) - H_\mathrm{m}°(0)]$. The standard molar entropy of formation, $\Delta_\mathrm{f}S_\mathrm{m}°$, at T = 298.15 K was calculated for the compound under study in the crystalline state giving –1916 ± 5 $\mathrm{J{\cdot}K^{-1}{\cdot}mol^{-1}}$. The complex thermal analysis of the C_{60}-Lys crystallohydrate was performed from T = 300 to T = 1323 K.