
Heat Capacities of Kaolinite from 7 to 380 K and of DMSO-Intercalated Kaolinite from 20 to 310 K. The Entropy of Kaolinite $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$

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Abstract: The heat capacities of kaolinite (7 to 380 K) and of dimethyl sulfoxide (DMSO) intercalated kaolinite (20 to 310 K) were measured by adiabatically shielded calorimetry. The third law entropy of kaolinite, S°_{298} , is $200.9 \pm 0.5 \text{ J} \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$.

The "melting point" of the DMSO in the intercalate, $288.0 \pm 0.2 \text{ K}$, is 3.7 K lower than that of pure DMSO, 291.67 K. The heat capacity of DMSO in the intercalate above 290 K is approximately $5.2 \text{ J} \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$ smaller than that of pure liquid DMSO at the same temperature.

Key Words: Kaolinite • Heat capacity • Entropy • Specific heat • DMSO:kaolinite

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