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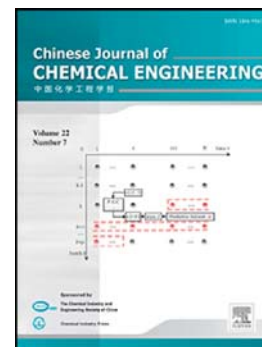
Investigation on specific heat capacity and thermal behavior of sodium hydroxyethyl sulfonate

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## Chemical Engineering Thermodynamics

**Investigation on Specific Heat Capacity and Thermal Behavior of Sodium Hydroxyethyl Sulfonate****Hongying Hao**(郝红英)<sup>1,2</sup>, **Yadong Zhang**(章亚东)<sup>1,\*</sup>, **Xiaoya Chen**(陈晓亚)<sup>1</sup><sup>1</sup> School of Chemical Engineering and Energy, Zhengzhou University, Zhengzhou 450001, China<sup>2</sup> Medical School, HuangHe Science and Technology College, Zhengzhou 450063, China

**Abstract:** The thermal decomposition process was studied by the TG-DTA analyzer. The results show the decomposition process of sodium hydroxyethyl sulfonate was consisted of three stages: the mass loss for the first, second and third stages may be about the groups of  $\text{CH}_3\text{CH}_2\text{OH}$ ,  $\text{CH}_3\text{CHO}$  and  $\text{SO}_2$  volatilized, respectively. The decomposition residuum of three stages was analyzed by FT-IR, and the results of FT-IR agreed with the decomposition process predicted by theoretical weight loss. The specific heat capacity of sodium hydroxyethyl sulfonate was determined by differential scanning calorimetry (DSC). The melting temperature and melting enthalpy were obtained to be 465.41 K and 25.69  $\text{kJ}\cdot\text{mol}^{-1}$ , respectively. The molar specific heat capacity of sodium hydroxyethyl sulfonate was determined from 310.15 K to 365.15 K and expressed as a function of temperature.

**Keywords:** sodium hydroxyethyl sulfonate, melting temperature, specific heat capacity, thermal decomposition

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