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Effect of solvent composition on DSC exothermic peak of human serum albumin suspended in pyridine-n-hexane mixtures

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Abstract

Human serum albumin (HSA) immersed in pyridine-n-hexane mixtures was analyzed using differential scanning calorimetry (DSC). State of the solid HSA in organic solvent mixtures is the non-equilibrium state which is seen as the exothermic peak on the DSC curves. The enthalpy change corresponding to this exothermic peak approaches zero when going from pure pyridine to pure n-hexane. Dependence of the enthalpy change on the pyridine concentration is suggestive that the non-equilibrium state of the immersed HSA results from the HSA-pyridine interactions 'frozen' at the lower temperature. Most likely the temperature-initiated exothermic peak observed on the DSC curves reflects the swelling of HSA by pyridine.

Keywords

DSC, Exothermic peak, Human serum albumin, Non-equilibrium state, Pyridine-n-hexane mixtures