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THERMODYNAMICS OF AQUEOUS AMINO  
ACID SOLUTIONS

A thesis presented in partial fulfilment  
of the requirements for the degree of  
Doctor of Philosophy in Chemistry  
at Massey University

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## ABSTRACT

1. The vapour pressures of L-serine-water solutions have been measured at 288.15K and 298.15K using a differential static method. From these the activity coefficients for L-serine as a function of concentration at each temperature have been calculated.
2. The integral enthalpies of finite dilution of aqueous solutions of L-alanine, L-arginine, L-cysteine, glycine, L-serine and L-valine have been measured at 298.15K using an LKB 10700-1 flow microcalorimeter. These have been used to calculate the relative apparent molal enthalpies and the relative partial molal enthalpies of the particular solutes as a function of concentration.
3. The relative partial molal entropies of water in aqueous solutions of the amino acids L-alanine, glycine, L-serine and L-valine have been calculated from activity data and from enthalpy of dilution data.
4. The results have been discussed qualitatively in terms of the proposals of Frank and Evans for water-solute interactions.

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