

Apparent Molar Volumes and Apparent Molar Heat Capacities of Aqueous N-Acetyl-D-Glucosamine at T/K = (278.15 to 368.15) and of Aqueous N-Methylacetamide at T/K = (278.15 to 393.15)

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We determined apparent molar volumes at $278.15 < (T/K) < 368.15$ and apparent molar heat capacities at $278.15 < (T/K) < 363.15$ for aqueous solutions of N-acetyl-D-glucosamine at molalities m from (0.01 to 1.0) mol/kg and at $p = 0.35$ MPa. We also determined apparent molar volumes at $278.15 < (T/K) < 368.15$ and apparent molar heat capacities at $278.15 < (T/K) < 393.15$ for aqueous solutions of N-methylacetamide at m from (0.015 to 1.0) mol/kg and at $p = 0.35$ MPa. Apparent molar volumes were determined from densities measured with a vibrating-tube densimeter, and apparent molar heat capacities were determined with a twin fixed-cell temperature-scanning calorimeter. Empirical functions of m and T for each compound were fitted to our results, which are then compared to those for N,N-dimethylacetamide. Estimated values of molar changes in volumes and heat capacities as functions of m and T for formation of aqueous N-acetyl-D-glucosamine from aqueous D-glucose and aqueous acetamide are calculated and discussed.