DENSITY, VISCOSITY, REFRACTIVE INDEX AND DIFFUSION COEFFICIENTS OF AQUEOUS ADIPIC ACID SOLUTIONS AT 25°C

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A thesis submitted in partial fulfillment of a master of science (Chemistry) degree of the university of Nairobi.

1994

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This thesis is my original work and has not been presented in any other university.

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This thesis has been submitted with my approval as the University supervisor

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DATE: 2-11-94
Density, viscosity, refractive index and diffusion coefficient measurements have been undertaken in aqueous adipic acid solutions at 25°C. The study has produced equations to describe the concentration dependence of density, viscosity and refractive index in aqueous solution at 25°C. Partial molal volume, $\bar{V}$, has been found to be 115.929 cm$^3$ mol$^{-1}$. Refractive index measurements have yielded the molar refraction of the acid [R]$_R$, which was found to be 30.147 using a sodium D light.

The differential diffusion coefficients at various concentrations have also been determined. At infinite dilution, the $D$ value was found to be $3.5854 \times 10^{-2}$ cm$^2$ sec$^{-1}$. The limiting equivalent conductivity of the adipate ion was found to be 83.3806 ohm cm•mol$^{-1}$. 