

S U M M A R Y

## SUMMARY

Molar conductance measurements of the ammonium chloride, dimethyl ammonium chloride and tetramethyl ammonium chloride in mixed aqueous solvents such as ethanol-water, methanol-water and acetone-water have been carried out. The composition of the non-aqueous solvents used were 0, 10, 20, 30, 40, 50, 60, 70, 80 and 90 % . The molar conductance measurements have been carried out at six different temperatures from 5 to 30°C at an interval of 5°C. The concentrations used for ammonium chloride in ethanol-water system were  $1 \times 10^{-2} \text{ M}$ ,  $1 \times 10^{-3} \text{ M}$ ,  $5 \times 10^{-4} \text{ M}$ ,  $1 \times 10^{-4} \text{ M}$  for dimethyl ammonium chloride and tetramethyl ammonium chloride in ethanol-water system  $1 \times 10^{-4} \text{ M}$ ,  $5 \times 10^{-5} \text{ M}$  and  $1 \times 10^{-5} \text{ M}$  concentrations were studied. In methanol-water system  $1 \times 10^{-2} \text{ M}$ ,  $5 \times 10^{-3} \text{ M}$  and  $1 \times 10^{-3} \text{ M}$  concentrations were studied for all the three electrolytes, while  $1 \times 10^{-2} \text{ M}$ ,  $1 \times 10^{-3} \text{ M}$  and  $5 \times 10^{-4} \text{ M}$  concentrations were used for acetone-water system.

The results obtained show that the molar conductance values pass through minimum at lower temperatures 5 and 10°C for the concentrations  $1 \times 10^{-4} \text{ M}$  and  $5 \times 10^{-5} \text{ M}$  for ammonium chloride in ethanol-water mixed solvents, there is regular decrease in molar conductance at

15, 20, 25, and 30°C. For  $1 \times 10^{-2} \text{ M}$ ,  $1 \times 10^{-3} \text{ M}$  and  $5 \times 10^{-4} \text{ M}$  concentrations there is no minimum in molar conductance for ammonium chloride. For dimethyl ammonium chloride minimum in molar conductance is observed only at 5°C for  $5 \times 10^{-5} \text{ M}$  concentration and at 5, 10 and 15°C for  $1 \times 10^{-5} \text{ M}$  concentration. Similarly the minimum in molar conductance is observed at 5, 10 and 15°C for  $5 \times 10^{-5} \text{ M}$  and  $1 \times 10^{-5} \text{ M}$  concentrations for tetramethyl ammonium chloride in ethanol-water solvents.

In the system methanol-water the molar conductance values pass through minimum not only at low temperature but at all the temperatures studied from 5 to 30°C and for all concentrations studied viz.  $1 \times 10^{-2} \text{ M}$ ,  $5 \times 10^{-3} \text{ M}$  and  $1 \times 10^{-3} \text{ M}$  for all the three electrolytes studied.

In the case of acetone-water system, no minimum in molar conductance has been observed even at low temperatures for the concentration  $1 \times 10^{-2} \text{ M}$  for ammonium chloride and dimethyl ammonium chloride but molar conductance values pass through minimum for  $1 \times 10^{-2} \text{ M}$  concentrations for tetramethyl ammonium chloride. Minimum is observed for  $1 \times 10^{-3} \text{ M}$  and  $5 \times 10^{-4} \text{ M}$  concentrations at all the temperatures studied and for all the three electrolytes studied.

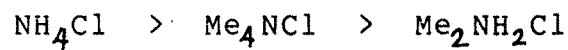
It has been observed that molar conductance values of ammonium chloride in ethanol-water, methanol-water and acetone-water obey the order :

acetone-water > methanol-water > ethanol-water  
upto 60 % of non-aqueous solvent. The order changes beyond  
60 % as :

methanol-water > acetone-water > ethanol-water.

Each system studied at six different temperatures  
namely 5, 10, 15, 20, 25 and 30° c indicate that the molar  
conductance varies linearly with temperature.

The study of molar conductance of ammonium  
chloride, dimethyl ammonium chloride and tetra methyl  
ammonium chloride in ethanol-water, methanol-water and  
acetone-water mixed solvents has revealed that it obeys in  
general the order :



The results of volume contraction indicate that volume  
contraction is independent of the nature of electrolyte and  
the concentration of electrolyte. It has been found that  
volume contraction is constant in the composition range 40  
to 70 % of non-aqueous solvents.