

## PREFACE

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This Conference follows those in the series which took place in Hamilton (Canada 1968), Manchester (England 1970), East-Lansing (USA 1972), Vienna (Austria 1974), Leeds (UK 1976), Waterloo (Canada 1978) and Regensburg (West Germany 1980). It was chaired by Prof. M. CHABANEL who, with the tireless and charming help of his colleagues, made the Conference a Scientific event and also an extremely pleasant visit to Nantes and its lovely surrounding areas.

In defining the scope of this meeting, the Organizing Committee had retained different aspects of present day Non-Aqueous Solutions, with an opening towards new frontiers such as energy generation media, micelles, vesicles and perfluorochemicals.

The plenary and session lectures are published in the hope of making its outcome beneficial not only to the participants but also to all those who deal with the Chemistry of Solutions.

Two chapters are concerned with the solvent effects on various processes. The thermodynamics, kinetics and mechanism of solvation are treated by M.J. BLANDAMER and J. BURGESS. This contribution deals with solvation and its kinetic consequences for a variety of substitution processes. In another chapter, C.F. BERNASCONI emphasizes the role of solvent reorganization that seems to be a dominant factor which determines the reactivity, selectivity and transition state structure in reactions such as proton transfer and nucleophilic addition.

The understanding of ionic solutions is enlightened also thanks to powerful physical methods. The NMR and Solvation of ions in non-aqueous solvents was treated by H.G. HERTZ who described the microscopic structure of the solutions in terms of ion-atom and ion-molecule distribution functions but took into account also the dynamics of the solvent molecules around the ions. J.H. HINTON, G.L. TURNER, G. YOUNG and K.R. METZ draw the attention on the potential use of thallium-205 NMR spectroscopy for the study of ion-transport across biological membranes. A review is presented by J. GOULON and C. GOULON-GINET on the application of Extended X-ray Absorption Fine Structure (EXAFS) Spectroscopy to the investigations on the structures of aggregates or complexes in non-aqueous solutions.

Practical aspects of the Chemistry of Solutions are also included. The preferential solvation of ions and ion transport in mixtures of water and an organic solvent was seriously analyzed by D. FEAKINS, R. O'NEILL and E. WAGHORNE while Y. MARCUS examined the mechanism of solvent extraction by selective ion solvation. This selectivity was explained by the difference in Gibbs free energies of transfer on the ion, and illustrated with examples on the extraction of halide anions, of lithium, magnesium and aluminium or of thorium and plutonium nitrates.

Micellar solutions, lipid vesicles and monolayers were also treated by C. TANFORD who considered the hydrocarbon region of spread amphiphile as discrete regions of non-aqueous solvents which have nearly the same properties as bulk liquid hydrocarbons. The author also discussed the mechanism of dissolution of a large variety of small organic solutes and the specific orientational intermolecular interactions in these media.

The chapter by M. GRATZEL deals with artificial systems that achieve photoconversion of solar energy. The author shows that when coupled with suitable highly active redox catalysts, organized assemblies such as surfactant micelles and colloidal semiconductors can be employed to accomplish cleavage of water or hydrogen sulfide by visible light.

Finally, a wonderful presentation by J.C. RIESS and M. LE BLANC on the solubility and transport phenomena in fluorochemicals relevant to blood substitution and other chemical applications, closed this wide series of reviews that constitutes an up-to-date survey of the state of the art in many domains of this rapidly developing field : the Chemistry of Solutions.

I wish to express my deep thanks to the authors who all provided in time their precious manuscripts carefully presented for direct photo-offset copy. I am also indebted to my colleagues of the Organizing Committee of the Conference who kindly entrusted me with this most exciting and pleasant job of conference editor.