

## PREFACE\*

When we started 6 years ago with our International Summer School and Conference on Solid/Liquid Interfaces there were many uncertainties how far we will be able to go in clearing some open questions in this field: both organizationally, and concerning the functional contents of our gatherings. Thanking to distinguished participants, mainly from abroad, it is possible now to say that the scientific contents gathered through our three schools, conferences and symposia were quite representative. To prove this we can examine the pages of our two books: *Solid/Liquid Interfaces* (1970), and *Chemistry of Interfaces* (1973). Now, after 6 years we have the chance to review more critically our intentions and some results.

At first it was our determination to hold our meetings annually, but the intermittent periods have been one, then two, and now three years in between; the first meeting was held from June 23 to July 4, 1969, in Cavtat-Dubrovnik; the second from September 14 to 26, 1970, at Rovinj; the third from June 27 to July 5, 1972, at Rovinj; and now the fourth one is again in Cavtat-Dubrovnik. Such a course reflects various factors which are shaping organizationally such kind of scientific gatherings.

Our aim toward a nucleation of so-called special interest group (SIG) has only partially been fulfilled. Some, but relatively few and very limited joint research projects have been initiated. On the scientific side, many separate areas, assumptions and contradictions have been left isolated, and some of us have an impression that the possibilities of penetrating discussions of many important items have not been fully exploited.

Probably, the usual presentation of interesting material in form of lectures with following unrecorded discussion, although later published, is not enough for removing the barriers between various working areas. By focussing our attention in principle on solid/liquid interfaces, the traditional aspects of solution, colloid, surface, and electrochemistry, on the one hand, and statics and dynamics, thermodynamics and kinetics, physics and chemistry, on the other, have brought to us such a mass of experiences and outlooks, that we have not reached the necessary narrowing of standpoints.

Perhaps we expected too much, but it seems worthwhile to try again and again to find out where are common problems and common answers, at least for some fundamental approaches to solid/liquid interfaces. As our Chinese colleagues would say: »In studying any complex process in which are two or more contradictions, we must devote every effort in finding its principal contradiction. Once this principal contradiction is grasped, all problems can be readily solved.« And to go on to: »Discover the truth through practice, and again through practice verify and develop the truth.« Without doubt, the ground on which we are working is very wide, very important, and full

---

\* Opening remarks to IV INTERNATIONAL SUMMER CONFERENCE on *Solid/Liquid Interfaces* and INTERNATIONAL SYMPOSIUM *Elektrochemistry of Interfacial Phenomena*, Cavtat-Dubrovnik, June 23—July 3, 1975.

of contradictions. Also the practices are various and numerous. But owing to the significance, both scientific and practical, we have to go boldly into the matter.

Mainly, we have to deal with open systems involving various natural and artificial, inorganic and organic solids in interaction with water and aqueous solution. Such systems, certainly, represent the largest and most important substrate for living beings. Accordingly, it seems very important, from many standpoints, to concentrate our special attention on those elements which have the widest application in interpretation of most frequently encountered structures and processes. Admitting, that our world is a changing world, the equilibrated states have to be looked upon as transitional ones, and the role of dynamical elements characterizing nonequilibrium states have to be accentuated. Also the sharp division between physical and chemical interactions has to be reconciled. In this sense, it seems that the spatial and temporal interpretations, joining in many ways thermodynamic and kinetic formulations, may be very helpful.

More and more we have to give the room for unionists like A. Einstein, J. Perrin, and The Svedberg, and to go out from isolated provinces in such a way that the units and mechanisms applied would have the precise meaning but with most general characteristics. It seems that for a systems approach to solid/liquid interfaces the properties of solid and liquid phase, and especially of the region between the bulk phase (methorical layer), have to be treated from the point of view of short and long range forces producing »kinetic entities«, of which chemical species are only one of the kind.

Therefore, it is of utmost importance that in such systems the dimensions of space and time are not neglected, but put in most prominent relationship to the definitions of »species«, various particles, and their »concentrations«. The dimensions of phase space under consideration and the corresponding uniquely determined number of each »species«, or otherwise definable units, certainly represent a controlling factor for the properties of a system as a whole. The meaning of free ion, ion pair, cluster and various complex species at elemental and colloid levels, should be treated in such a way as to take into account the dwelling time for various intermediate constituents reflecting short and long range interactions. In some circumstances results will be expressed in dynamical equilibria, while in others chain reactions of great variety may be initiated.

Being fully aware of the difficulties of such comprehensive spatial temporal approach to physics and chemistry of solid/liquid interacting region, I am still convinced that the presence of many distinguished participants at this meeting makes a challenging opportunity to find some solutions with respect to such a unifying effort in the traditional fields of physics and chemistry, and more particularly in the field of colloid chemistry and electrochemistry.

**Božo Težak**