

SYMPOSIUM ON SURFACE PHENOMENA IN LIQUIDS AND IN LIQUID SOLUTIONS

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FOLLOWING the resolution of the Ninth All-union Conference on the Physics of the Liquid State of Matter, of the Section of Liquid-state Physics, the Science and Technology Council of the Ministry of Higher and Secondary Education of the USSR, and of the D. I. Mendeleev All-union Chemical Society, a symposium on surface phenomena in liquids and liquid solutions was held from 26 to 29 January 1971 at the Leningrad State University. Representatives of 55 scientific institutions from 21 cities and five republics of the Soviet Union took part. The symposium was devoted to theoretical and experimental studies of surface phenomena on liquid-gas and liquid-liquid interfaces, and 42 papers were delivered. These dry statistical data summarize the results of a small but carefully and well organized and successfully held conference. The participants were completely free of concern for living accommodations and could work quietly. All the days of the symposium followed the same pattern. There were two or three 40-minute papers (eleven altogether) on topics of sufficiently general interest, and seven or eight 15-minute reports. The most lively discussions followed, as a rule, the longer papers. Participation in the discussion was quite general and unrestricted within reasonable limits. It is impossible to cover in a brief note all the interesting papers, or even report in detail on those causing the greatest interest. But this is unnecessary in our case, for the proceedings of the symposium are already in press, and judging from the general tendency and organization of the symposium they will soon be published. It should be noted that besides such traditional surface properties as surface tension and adsorption, there were discussions (both experimental and theoretical) of the composition, thickness, strength, reflectivity, ellipticity coefficient of reflected light, meaning properties connected with the use of new methods in theory and practice of surface phenomena and yielding additional information on the structure of surface layers, including those of polymers. A number of papers dealt with the properties of surface layers near the critical point, a question as timely as it is complicated from both the theoretical and experimental points of view. Many communications dealt with condensation, and were followed by particularly interesting discussions. The organizing committee took particular notice of the following; a theoretical paper by V. L. Kuz'min, F. M. Kuni, and A. I. Rusanov

on the molecular structure of a surface layer near the critical point (with an accurate and curious account taken of the influence of the gravitational field); work by V. K. Fedyanin on quantum-statistical derivation of the equation of state of interacting atoms adsorbed from the gas phase and from a solution; that of G. A. Martynov on the general theory of the double layer (Martynov's approach, based on Bogolyubov chains of equations for the distribution functions, a procedure used once by S. V. Tyablikov for electrolytes, is undoubtedly promising).

A successful combination of theory and experiment is a paper by N. A. Fuks and A. G. Sutugin, in which the results of computer experiments are compared with experimental data, and the conclusion is drawn that the condensation coefficient depends on the particle dimensions; this dependence is particularly effective in the case of small nuclei. Synthesis of a complicated and thorough theoretical interpretation with sufficiently precise experiments is a feature of a paper by A. I. Rusanov, S. A. Levichev, and V. A. Pshenitsyn, devoted to the thickness of surface layers of liquid solutions (thermodynamics and ellipsometry), and of a paper by A. I. Rusanov and V. A. Pshenitsyn, dealing with the reflection of light and the thickness of a surface layer near the critical point. Interesting experimental investigations were made by N. P. Fedoseeva, V. M. Kuchumova, L. A. Kochanova, E. D. Shchukin, and P. A. Rebinder, who revealed a region of emulsion stability near the critical mixing temperature; by V. N. Kuleznev, L. S. Krokhhina, and L. B. Kandyryn, who investigated emulsion formation in a polymer + polymer + solvent system; by V. A. Izmailova and P. A. Rebinder, who studied the structural and mechanical properties of adsorption layers of surface-active polymers and proteins on liquid interfaces, a study of considerable practical significance. Most of the communications were of interest, as can be verified, in my opinion, by any one who succeeds in acquiring the proceedings of the symposium. The organizing committee proposes to hold symposia of these type regularly, but of course varying the subject matter. Would that all the succeeding symposia be as interesting and at as high a level of organizational and topical activity.

Translated by J. G. Adashko