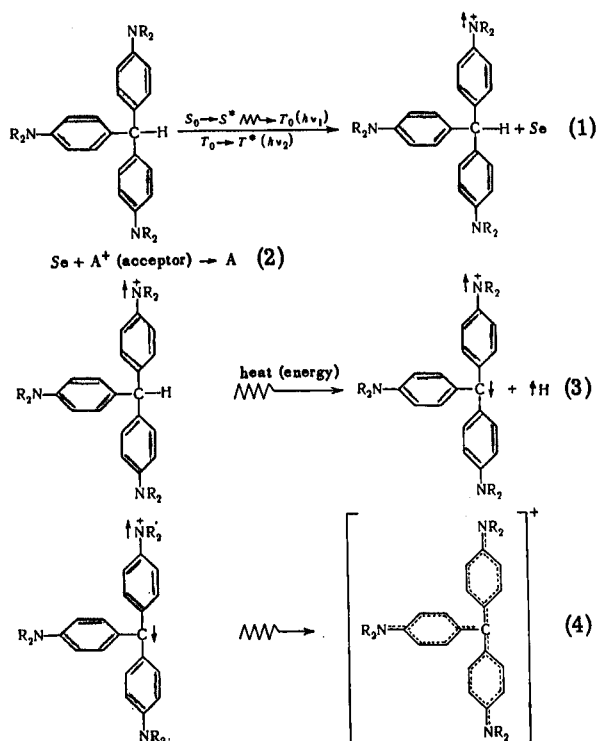


On the basis of the facts enumerated above, the whole process can, in our opinion, be subdivided into the following stages



Photoionisation with formation of a radical-cation and a solvated electron takes place in stage (1) in these systems. The solvated electron is captured (2) by active impurities in the solvent (oxonium, alkylloxonium ions, etc.).

Unfreezing (3) is accompanied by cleavage of the C-H bond, which requires little energy (10–12 kcal mole⁻¹) because of coupling of the electrons (of the nitrogen and carbon atoms) and delocalisation of the positive charge⁴. This reaction can also be stimulated by interaction with matrix radicals and as a result of energy transfer to the C-H bond on exchange interaction of the unpaired electron of the nitrogen with the σ -electrons of this bond, which is favoured by the diminution in steric hindrance accompanying unfreezing. The hydrogen atoms recombine with one another to form hydrogen molecules. Aromatic amines sensitise the formation of matrix radicals by a mechanism described previously^{10,11}. It is therefore probable that, under the given conditions, only a proportion of the radical-cations break down with the formation of dye cations, the remainder being consumed in the formation of hydroxyethyl radicals. This is indicated in particular by the weak thermoluminescence in alcoholic solution.

In hydrocarbon matrices, in which electron-acceptor impurities (additives) are absent, formation of cations is not observed. If, however, silica gel, which possesses electron-acceptor properties, is introduced into these media, formation of dye cations is actually observed. We have observed this effect on introducing silica gel into an isopentane solution of the leuco-base of Crystal Violet.

A detailed account of the investigation will be published in the near future.

Thus the formation of the cations of triphenylmethane dyes when their leuco-bases undergo photolysis involves an

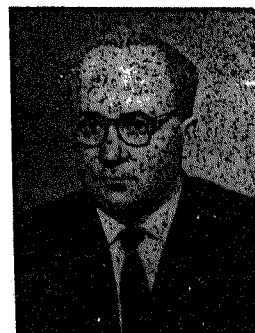
intermediate stage in which radical-cations are produced and then break down. Generation of a radical-cation must be assumed to be a necessary stage also in the formation of these cations in the absence of photoexcitation in media containing strong electron-acceptors.

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MISCELLANY



ALEKSEI VASIL'EVICH STORONKIN
(FIFTIETH BIRTHDAY)

October 22nd, 1966 marked the fiftieth birthday of Professor Aleksei Vasil'evich Storonkin, of the A. A. Zhdanov Leningrad State University.

Storonkin became profoundly interested in the thermodynamic theory of multicomponent systems whilst still a student, and published his first papers in this field. On graduating from Leningrad University in 1940, he stayed on to do research in the Department of Physical Chemistry.

From 1941 to 1945 Storonkin actively fought as an officer of the Red Army in the 2nd World War and received Government honours for this.

A new period in Storonkin's scientific research began after the war. By 1947 he completed a series of studies published as a monograph, "The Conditions of Thermodynamic Equilibrium in Multicomponent Systems", for which he was awarded a Government Prize in 1950. These studies were a further development of the fundamental concepts of Gibbs-Konovalov concerning the relationship between temperature, pressure and the composition of the existing phases. Storonkin also put forward a derivation of the generalised differential van der Waals equation, which now underlies the whole theory of heterogeneous multicomponent systems and is widely used in Soviet and foreign literature. His generalisation of the Konovalov and Vreskii laws is also of fundamental importance. He has carefully analysed the possibilities of extending the laws of binary systems to multicomponent ones.

During this period Storonkin began teaching at Leningrad University. In 1951 he established the Department of the Theory of Solutions at the Chemical Faculty, initiating and teaching a series of new courses on the theory of solutions and heterogeneous systems. The scientific seminars which he organised aroused the interest of a wide circle of physical chemists and have become one of the centres of advances in chemical thermodynamics in the Soviet Union. Aleksei Vasil'evich has always given particular attention to the training and education of young scientists.

Latterly Storonkin and his students have included many important applied aspects of chemical thermodynamics in their research. Among these may be mentioned the detailed elaboration of the thermodynamics of three-component two- and three-phase systems of various types, the results being of fundamental importance in developing methods for the separation of mixtures. A far from complete list of the main lines of the theoretical and extensive experimental investigations carried out under Storonkin's direction includes such topics as the connection between the form of the solubility isotherms of solid and liquid phases and the nature of the interaction of the components, the laws of the change in the chemical potential of the components on the coexistence isotherms, the methods of calculating the chemical potentials of solid solutions from the data on the solubility of the latter, the study of the thermodynamics of open evaporation and the azeotropic properties of three-component systems, and the development of the theory of critical phenomena. The results

obtained have also found extensive application in the theory of surface phenomena.

Professor Storonkin crowned the twenty five years of his scientific research by publishing a fundamental work - a two-volume monograph entitled "Thermodynamics of Heterogeneous Systems".

Storonkin's research and teaching interests have not been confined to chemical thermodynamics. For many years he has been teaching courses in statistical physics and chemical kinetics. He created a new University course in the thermodynamics of irreversible processes. His lectures are always outstanding in skill, depth of content, originality and novelty.

In the works of Professor Storonkin the creative development of the scientific heritage of the Soviet school of physical chemistry is inextricably bound up with a splendid knowledge of the history of Russian science and with the special papers written by him on this subject during the period when he was Director of the D. I. Mendeleev Museum.

He has dealt with the connection between the past, the present, and the future of science, and the interpenetration of different scientific disciplines in a series of his lectures and discussions on the problems of mineral formation, the principles and concepts of chemical thermodynamics, physicochemical analysis, and the thermodynamics of biological systems.

Among Storonkin's students there are two Doctors of Science and 19 Candidates of Science. Storonkin has always skillfully combined his extensive research and teaching activities with many-sided administrative and community work as Dean of the Chemical Faculty, Prorector of the Leningrad State University in charge of research, and Director of the Chemical Institute. Storonkin also devotes much energy to Party work. His research and teaching activities have been recognised by the important award of the Order of the Red Banner of Labour.

Professor Storonkin is in the prime of his creative powers and is full of broadly-based scientific ideas. His friends and colleagues wish him good health and further successes in his research and teaching.

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