Colloid Polym Sci 278:811–813 (2000)

Heinz Hoffmann

On June 23, Heinz Hoffmann will celebrate his 65th birthday. On this occasion, all his friends and colleagues will be pleased to offer him their best wishes concerning health and happiness. Professor Hoffmann is still very active in many areas of surfactant and colloid science. His fundamental research contributions have been published in more than 280 papers, and despite this large number of results there are still forthcoming activities planned for the next few years. His scientific experience, his advice and views continue to be highly estimated.

Heinz Hoffmann was born in June 1935 in Käshofen/Palatinate (Germany). After finishing school in 1955, he entered the University in Würzburg, where he began to study chemistry. Two years later, he changed to the 'Technische Hochschule Karlsruhe', where he received his master's degree in physical chemistry. In 1962 he completed his dissertation under the guidance of Walter Jaenicke. In this time, he worked on special electrochemical reactions which occurred after applying step-function electric currents. This fundamental research was characterized by experiments being simple in concept but difficult to execute and which involved precise and careful construction of the measuring cells. After completing his PhD thesis, Heinz Hoffmann worked as a postdoctoral researcher at the 'Case Western Reserve University' in Cleveland/Ohio, where he spent 1 year with Prof. E. Yeager. In this time, he received many new impulses for his scientific career. An area in which he acquired a broad interest was the measurement of fast electrochemical relaxation processes. In these experiments special emphasis was placed on phenomena occurring on the surface of well-defined electrodes. It was during this postdoctoral visit to Cleveland that Heinz Hoffmann met and married Claudia, his charming wife.

After returning to Germany, Heinz Hoffmann worked for 1 year as a research and teaching assistant at the University of Erlangen. Afterwards, he went back to the University of Cleveland, where he developed new fields of activity. In 1969, he finally returned to the University of Erlangen, where he completed his thesis for his postdoctoral lecturing qualification on "kinetic investigations of octahedral nickel complex formations". During this period, he started to build up a new laboratory for kinetic investigations, and he used advanced techniques such as shock-wave tubes or pressure and temperature-jump experiments, in order to measure fast kinetic processes. This special equipment was originally developed by Manfred Eigen in Göttingen, who received the Nobel Prize for chemistry in 1967 for detailed investigations of fast kinetic reactions. A few years later, the same scientific instruments were modified by Gerhard Platz and Heinz Hoffmann in order to study the kinetic aggregation processes of surfactant micelles. At this time, it was known that after disturbing the equilibrium state some surfactant solutions exhibit a very fast relaxation process of the order of a few microseconds. Some experimental results, however, also pointed to the existence of much longer time constants in the range of milliseconds. With extraordinary ability Heinz Hoffmann was able to understand that two different processes occur in solutions of ionic surfactants after suddenly changing the equilibrium conditions. The fast relaxation time could be attributed to the shift of the micellar distribution curve. This process is mainly governed by the exchange rates of the surfactant molecules, which are permanently leaving or entering the micelles. The long relaxation time could be explained on the basis of a limited average lifetime of the micellar aggregates. In international collaborations and friendships with Raoul Zana, Gunnar Anianson and S.N. Wall a theoretical model was derived which allowed the quantitative description of the dynamic aggregation

processes. From this theory it was finally possible to calculate many interesting properties of the micelles, such as the mean value of the aggregation number, the width of the micellar distribution and the average aggregation numbers of the micellar nuclei. In honor of his difficult and basic experimental work, Heinz Hoffmann was appointed to a full professor position for physical chemistry in Bayreuth (1975), where he is still working and teaching today. One year later, he was honored with the 'Nernst' award of the 'Deutsche Bunsengesellschaft'. After such a successful start, Heinz Hoffmann broadened his scope, covered new fields of activity and founded one of the major institutes for fundamental research in surfactant science. During the next few years, he worked on many different subjects, such as viscoelastic surfactant solutions, vesicles, liquid crystals and ringing gels. As an excellent scientist, he always tried to find a reasonable way of interpreting the experimental data; introducing some simplifications, when necessary, but keeping the essential features. A fairly good example of such an intuitive way of understanding the physical properties of complex colloidal systems is given by some striking features which were first observed in viscoelastic surfactant solutions. Many studies of the rheological properties revealed a monoexponential relaxation behavior in certain concentration regimes. Heinz Hoffmann was certainly the first scientist who showed that this phenomenon is due to the limited average lifetime of the micellar aggregates. Nowadays, we have detailed knowledge of these molecular processes due to recent theories of M.E. Cates, and there is now general agreement that the original idea of breaking micelles was indeed correct. An extended analysis of this simple example shows the major source of Heinz Hoffmann's success: he can easily combine different results to get an unexpected solution. It is very characteristic for him to use a broad range of different experimental techniques, in particular, electron microscopy, small-angle neutron scattering, rheology, electric birefringence, static and dynamic light scattering, flow birefringence and optical microscopy, for experimental investigations of complicated colloidal systems. From this large amount of information he has the talent to separate the most interesting things. In this way he has pioneered many areas of surfactant science and very often he succeeded in forming the key research on which present knowledge has been built. During the last 10 years, he investigated a large number of different colloidal systems, such as microemulsions, ringing gels, networks, liquid crystals, viscoelastic foams, multilamellar vesicles and iridescent phases. On these topics he helped to clarify the molecular structures and dynamic features. It is really impossible to list all the subjects of his scientific work; it is worth noting that he has studied the properties of surfactant solutions in the broadest possible sense. Of particular and long-standing interest to him was the investigation of the L_3-sponge phase, where he discovered and confirmed the existence of multiply connected three-dimensional networks with saddle-shaped structures. In recent years, Heinz Hoffmann developed special techniques to build up defined suspensions of multilamellar, onion-like vesicles. In this case, the aggregates were simply formed by chemical reactions and not by the application of external shear forces, which are more complicated to control. In all these areas his work is still making a significant impact on surfactant science. The interesting results have led to many international collaborations and friendships with colleagues in different countries. In 1984, Heinz Hoffmann was a visiting scientist at the Du Pont Company in Wilmington (Delaware) and in 1989 he was invited to spend 2 months at the 'Tokyo Science University' in Japan. During all this time, he was a dedicated member of the editorial board of several scientific journals, dealing with colloid science. This also includes the journal '*Colloid and Polymer Science*', and Heinz Hoffmann is, therefore, well known to all readers of this article. It is certainly a hallmark of his career that he

served as a founding chairman of the European Colloid and Interface Science, and for a couple of years he was selected as the general secretary of this society (1987–1992). In addition to these positions, Heinz Hoffmann was also president of the German Colloid Society from 1987–1991. On behalf of his outstanding contributions to colloid chemistry Heinz Hoffmann received the 'Wolfgang Ostwald Prize' of the German Colloid Society (1995) and a few years later the 'Lectureship Award' from the Chemical Society of Japan (1998). Besides being engaged in scientific work, Heinz Hoffmann has also carried more than his share of wider administrative duties. In spite of all these different activities, his friends, colleagues and students are deeply impressed by his kindness, modesty and they know him as a warm and generous person who has somehow acquired the wisdom and knowledge of an emeritus professor.

We sincerely hope that he will enjoy health and happiness for many years to come, and we still count on new activities and interesting contributions to scientific projects.

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