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Dedication to Professor Michael Hanack on the Occasion of his 80th Anniversary

Dear Reader!

This issue of the journal Macroheterocycles is opened with several papers dedicated to Professor Michael Hanack on the occasion of his 80th Anniversary. Professor Hanack has started his research of phthalocyanines in 1980. Twenty years later in 2000 his significant contribution into synthetic chemistry of these macroheterocyclic compounds and study of their application related properties was recognised by the scientific community, when Society of Porphyrins and Phthalocyanines nominated him to Lifetime Achievement Award in Phthalocyanine Chemistry. Since then, even after his retirement in 2001, he remains one of the most active and fruitful phthalocyanine scientists.

Scientific Career

From 1949/50 to 1954 Michael Hanack did his undergraduate-studies in chemistry at the Universities of Freiburg, Bonn, and Tübingen. In addition he studied four semesters philosophy and two-economics. After his Diploma examination in 1954, he accomplished the graduate work in stereochemistry with Professor Dr. Dr. h. c. mult. Walter Hückel and obtained his PhD degree in 1957. After that he was the assistant with Professor Walter Hückel, and from 1958 to 1961 he prepared his habilitation in organic chemistry and stereochemistry. Since 1962 he had the position of the Private Dozent and in 1968 became the APL Professor.

In 1970 Michael Hanack was called to the University of Saarbrücken as full Professor of Organic chemistry and head of the Department of Organic Chemistry (successor of Professor Bernd Eistert). He turned down another offer from the University of Kaiserslautern. In April 1975 Michael Hanack was called as full Professor of Organic Chemistry to the University of Tübingen (successor of Prof. Eugen Müller). For two years M. Hanack was dean of the Faculty of Chemistry and Pharmacy, from 1995 to 2001 he was head of the Department of Chemistry at the University of Tübingen.

Since 2001 Professor Michael Hanack is emeritus Professor but actively continues his research work on phthalocyanine-sugar conjugates.

From 1978-1998 Michael Hanack was one of the editors of the standard synthesis handbook "Houben-Weyl, Methods in Organic Chemistry". He also was one of the editors of the Journal of Synthetic Metals, was and still is a member of the advisory board of some other chemistry journals. He is Fellow of the New York Academy of Science.

Professor Michael Hanack received the University medal of Helsinki, became the Dr. rer. nat. h. c. of the Universidad Complutense de Madrid (1991). He received the Arthur G. Dandridge Award in Phthalocyanine Chemistry in 2000 and Elhuyar-Goldschmid-Preis in 2002.

Research Interests

The scientific work of M. Hanack started during his habilitation with investigations on organic fluorine compounds, followed by work in special topics of stereochemistry, mostly in the field of conformational analysis. He wrote one of the first books on the conformational analysis "Conformation Theory", Academic Press (1969). Professor Michael Hanack continued his research work in the field of organic reaction mechanisms, especially investigating the chemistry of vinyl- and phenyl cations. Already in 1964 he was able to prove the existence of a vinyl cation as a reactive intermediate. A book on Vinyl Cations was published in 1979 together with P. Stang, Z. Rappoport and L. R. Subramanian (Academic Press). Most of the work on vinyl cations was done in relation to solvolysis studies in which mostly super leaving groups like triflates and nonaflates were used for the generation of vinyl cations. Later on their basis it was also possible to probe for the first time the existence of an alkynyl cation.

Several other research topics of M. Hanack were concerned with the synthetic potential of perfluoroalkyl sulfones and extensive work on the synthesis of fluorinated pyrethroids.

Since 1980 the experimental work of M. Hanack con-centrated more on interdisciplinary topics, mostly on topics, which allow a combination of synthetic organic chemistry with material science. This work focused at the beginning mainly on the synthesis and properties of

bridged macroheterocyclic transition metal complexes, which were studied concerning their properties as intrinsic organic conductors, as well as in relation to their magnetic and non-linear optical properties. Mostly substituted and non-substituted transition metal phthalocyanines (Pcs) and naphthalocyanines (Ncs) were studied as assembled by organic bridging ligands in a stacked arrangement as "shish-kebab" polymers. The investigations on phthalocyanines and related compounds also led to the first separation of the four constitutional isomers of tetrasubstituted phthalocyanines. The work on phthalocyanines was continued applying them as subunits in ladder polymers. For the first time it was possible to synthesize fully conjugated phthalocyanine-polymers by using repetitive Diels-Alder reactions.

The international recognition which Professor Hanack received in these new research areas resulted in his election as the chairman of the "International Conference on Science and Technology of Synthetic Metal", which was organized with more than 1000 participants in Tübingen in 1990. He also actively participated in scientific meetings on phthalocyanine chemistry (see photoes below).

The group of Michael Hanack published the first crystal structures of different phases of phthalocyaninatotitanoxide (PcTiO), which became a very important charge generation material, *e.g.* in Xerox machines. Substituted PcTiO's, soluble in organic solvents were also synthesized and their photoconductive and charge generating properties were studied in detail.

Another topic which was investigated for several years was the synthesis and structure studies of poly-*p*-phenylene-vinylene (PPP) analogous model compounds and its application in OLED's. Photoluminiscent polymeric materials were studied using a whole variety of different compounds and new methods were developed to build LED devices. The use of phthalocyanines as hole conducting materials for the preparation of electroluminescent devices was studied.

More recently the work of Professor Hanack concentrates on the following topics:

The optical limiting properties of many new synthesized indium and gallium phthalocyanines and naphthalocyanines of different structures and with different axial substituents were extensively investigated. This class of compounds turned out to be the best optical limiters, which are known up to now.

For the first time it was possible to generate a new highly reactive Pc-species, the dehydrophthalocyanine. The reactivity of this species was investigated in detail, especially with the goal to obtain dimerisation reactions to generate higher condensated Pc's, for which special electrical and NLO- properties are expected.

Sugar substituted metal phthalocyanines and metal naphthalocyanines were almost unknown up to 2006. Since that time Professor Hanack focused his research also on the syntheses of this new class of compounds, in which sugar molecules are attached to the Pc- and Nc-macrocycle containing Zn, In, Si or Al as the central metal, for applications in photodynamic therapy (PDT).

In addition to the already mentioned two monographs, Professor Michael Hanack has published up to now more than 670 papers, among them more than 350 on phthalocyanine and related compounds (see complete list at http://www.uni-tuebingen.de/hanack/publications.htm/).

Since 1964 more than 230 students have received their PhD under his supervision. The laboratory of Professor Hanack was very hospitable for young scientists from different countries including Russia, and for many of them their work together with Professor Hanack and collaboration with him became a very important accelerating stage in their scientific carriers.

We congratulate Professor Michael Hanack with his glorious 80th Anniversary, and wish him healthy and long life and further successful years in research of phthalocyanines.

Photoes from scientific meetings

Prof. Michael Hanack together with participants of the 2nd Symposium on Phthalocyanines in Edinbourgh (1998).

At ICPP-1 in Dijon (2000) together with Profs D. Sandman, T. Torres and other participants.

At ICPP-3 (New Orlean, 2004) together with Profs D. Wöhrle, T. Torres and C. Leznoff.

At ICPP-4 (Rome, 2006) together with Prof. P. Stuzhin

At 5th International Conference on Porphyrins and Phthalocyanines (ICPP-5, Moscow, 2008).

Together with Dr. Yu. Gorbunova, Acad. A. Tsivadze, Profs T. Torres and M. Crossley.

Together with Profs T. Torres, K. M. Kadish, M. Islyaikin and Dr. S. Rodriguez-Morgade.

Together with Prof. M. Cook, Ms. Cook, Profs A. Rowan and N. Mc Keown.

With Prof. T. Torres and Dr. A. Sastre (Madrid, 1995).

Prof. M. Hanack in his office with Dr. S. Vagin (Tübingen)