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14th Annual International Conference on Advances in the Stabilization and Degradation of Polymers

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14th Annual International Conference on Advances in the Stabilization and Degradation of Polymers

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The 14th conference on aging and stabilization of polymers was held from May 25 to 27, 1992 in Lüzern, Switzerland. As before, the conference was organized by Professor Angelos V. Patsis from the Institute of Material Science of the State University of New York (New Paltz, NY, USA) the chairman of the Organizing Committee. For many years Dr. Peter Klemchuk, head of the Department of Chemical Additives for the Polymer Research Center of Ciba-Geigy Corp. in Ardsley, New York, has been a chairman of the scientific program committee.

The organizing committee includes well-known scientists in the field of degradation and stabilization of polymers: Prof. Norman C. Billingham (head of group, Brighton, University of Sussex, England), Prof. Jean Marchal (head of Laboratory Institute, Charles Sadron, C.N.R.S., France), Prof. Rolf Mulhaupt (Director of Macromolecular Chemistry Institute, Albert-Ludwigs University, Freiburg, Germany), Professor K. Murakemi (Tokyo University, Japan), Prof. J. Pospisil (Czechoslovakian Academy of Sciences, Czechoslovakia) and Prof. David Wiles (National Research Council of Canada).

The conference was attended by scientists from 12 countries, totaling about 100 participants from 250 organizations of various research centers of companies, academies of sciences, and from universities and institutes belonging to higher education and applied ministries.

The conference involved 15 plenary lectures and a few short reports about extension of storage and reliable usage of polymer products; prediction of the polymer "life-span"; creation of express methods for evaluation of polymeric stability; the use of degradation as a polymer modification method; giving properties to polymer products; the secondary use of polymers; their secondary processing and regeneration of monomers; reduction of polymer combustibility; incineration of polymer wastes and environmental control; creation of new polymers with improved resistance to different kinds of degradation; creation of polymeric materials with given lifetimes; synthesis and study of the mechanism of action of different stabilizers; and mixed synergistic and incompatible effects of additives in polymers.

The many types of degradation—thermal, thermooxidative, photooxidative ra-

diation, and hydrolytic and biological — of polymers, polymer blends and composite materials were discussed during the conference.

A number of plenary reports were devoted to photodegradation and light stabilization of polymers. A special lecture dealt with mechanisms of energy dissipation by ultraviolet absorbers (J. Catalar and R. Sastre, University of Madrid, Spain). The inter-relationship of structure, physical properties and stabilization performance of hindered amine light stabilizers was covered by S. B. Samuels (Union Carbide Chemicals and Plastics Co., USA).

Great interest was aroused by the paper on hindered amine stabilizer as long-term stabilizers (W. Drake, Ciba-Geigy AG, Switzerland). Ultra-acceleration of the photoaging of polypropylene for the automotive industry was reported by M. Barrois (together with M. Duteurtre and A. Legros) from Renault Direction Generale, France. One lecture dealt with chemiluminescence studies of the early stage of polypropylene photooxidation and stabilization (G. A. George, M. Celina, and M. Ghaemy, The University of Queensland, Australia). Hindered amine light stabilizers (influence of substituents and molecular weight on efficiency) was discussed by P. Hrdlovic from the Institute of Polymers, the Slovak Academy of Sciences, Czechoslovakia. A special lecture dealt with the determination of peracids in photooxidation of polypropylene (J. Sedlar and A. Zahradnickova, the Research Institute of Macromolecular Chemistry, Czechoslovakia). Photochemical behavior in the solid phase of polymers bearing pendant acyloxyimino groups and their application to photoresists was reported by M. Tsunooka from the University of Osaka, Japan. Two lectures were devoted to degradable polymers: the report of A. Andradý from the Research Triangle Institute (USA) dealt with performance of environmentally degradable polymers under outdoor marine exposure, and the speech of J. de Bruin from Delft Technical University (The Netherlands) dealt with application at fracture mechanism to degraded polymers.

The influence of temperature, thickness and stabilizer system on the long term heat stability of polypropylene was presented by P. Gijsman, J. M. A. Jansen and J. A. J. M. Vincent (DSM Research, The Netherlands), and the mechano-chemical degradation of polymers and its after-effects was discussed in the report of J. Sohma (Kanagawa University, Japan). Great interest was aroused by the lecture of L. Rosik (with co-author Z. Horak) from the Research Institute of Synthetic Rubber, Czechoslovakia, which showed selected problems connected with the aging, degradation and stabilization of flame-retardant styrenic plastics.

Two final reports were devoted to PVC degradation: R. J. Meier and B. J. Kip from DSM Research (The Netherlands) spoke about a quantum chemical study of degradation and maximum polyene lengths in PVC, and H. Votter (Ciba-Geigy, GmbH, Germany) talked about new PVC heat stabilizers as an alternative to Cadmium- and Lead-containing systems.

On the whole, the International Conference's work has revealed the increased level of scientific and practical studies in polymer aging and exploration for methods of polymer stabilization. In the world, a standing seminar of scientists from different countries has emerged. It has provided exchanges of information and discussions on an urgent problem: improving polymer quality and producing new polymer articles.

The next (XV) international conference will be held in May 1993 in Lüzern.