

1982

Symposium on Functional Polymers, Kunming, Yunnan, People's Republic of China

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Vogl, Otto and Takemoto, K., "Symposium on Functional Polymers, Kunming, Yunnan, People's Republic of China" (1982). *Polymer News*. 186.

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Symposium on "Functional Polymers", Kunming, Yunnan, People's Republic of China (P.R.C.)

CONFERENCE
REPORTS



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In Kunming, Yunnan, P.R.C., a Symposium on "Functional Polymers" was held from September 11 to September 15, 1981. Kunming is the capitol of Yunnan, the most southwestern Province of China; it borders Burma, Laos and Vietnam. Kunming is a city of 1.8 million and is located at an elevation of 5500 feet; it is said that it has perpetual Spring.

The meeting was organized under the auspices of the Polymer Division of the Chinese Chemical Society with Professor Wang Baoren of the Institute of Chemistry, Academia Sinica, Beijing, as the Chairman and an organizing committee consisting of Professor Feng Xinde, Beijing University, Professor He Binglin, Nankai University, and Dr. Liu Hui, General Secretary of the P.R.C. Chemical Society. The actual organization was in the hands of the local committee with Li Kai and Yang Fulin, Vice-Chairman and Secretary General of the Chemical and Engineering Society of Yunnan Province. One hundred forty polymer chemists from all over China participated; most of them came from 1000-1200 miles away, essentially all participants came by train; the train ride from Beijing is about 60 hours and the jet flight about 3 hours.

The meeting consisted of 5 invited papers and 70 contributed papers from institutions throughout the P.R.C. Most prominently represented were the Institute of Chemistry, Academia Sinica, Beijing, University of Beijing, Nankai University in Tianjin, Changchun Institute of Applied Chemistry, Changchun (Jilin), Wuhan University and the Institute of Photographic Chemistry, Beijing. Contributions had also been received from other institutions of China: Zhejiang University, East

China Normal University, Chengdu Institute of Organic Chemistry, Chengdu, (Sichuan), and Lanzhou University. The 5 invited papers were given by O. Vogl (U.S.A.) on "Functional Polymers", J. F. Rabek (Sweden) on "Functional Photo Polymers", R. Kunin (U.S.A.) on "Crosslinked Functional Polymers", K. Takemoto (Japan) on "Vinyl Polymerization by Polymeric Metal Complexes", and B. D. Halpern (U.S.A.) on "Biomedical Polymers".

While the overall organization and the program planning was in the hands of the organizing committee, the local organization of Yunnan Province handled the day to day operations. One day and a half was devoted to plenary lectures; the contributed papers were treated in four individual sessions: (a) biomedical polymers, (b) ion-exchange resins and absorbants, (c) polymeric catalysts, and (d) photosensitive polymers.

The preprints of the proceedings of the Symposium on "Functional Polymers" were written in English with Chinese abstracts. The invited, and most of the contributed papers, were given in English. The invited speakers worked with individual sessions and participated in their discussions. The meeting format allowed personal interaction and had its own flavor with a strong international component.

In the session of biomedical polymers the preparation of materials was discussed as were studies of mechanical properties and morphology, grafting on segmented polyurethane, and the study of polyurethane surfaces for biomedical applications. Also described were grafting of acrylic monomers onto films, collagen and hard tissues. A considerable amount of time was spent on chemotherapeutic polymers particularly polymers that contain 2-thiouracil, 6-methyl-2-thiouracil or 5-fluorouracil, either as part of the polymer main chain or attached onto the side chain. The synthesis of aspirin-re-

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leasing biocompatible polymers and the preparation and evaluation of block copolymers of ϵ -caprolactone and lactide were also reported.

In the session on ion-exchange resin and polymeric absorbants, much of the work was concerned with traditional crosslinked polystyrene ion-exchange resins, modified for specific purposes. Interpenetrating network ion-exchange resins, reactions with thiocyanates, crown ether chelating resins for specific metal ions [copper (II) ions] but also those containing amino and carboxylic acid groups, chelating resins, especially with dithiocarbamate groups, some containing the ethylene diamine group, α -amino acids or resins specific for boron and rare earth metals, were discussed. Basic studies were reported on the copolymerization of styrene and divinylbenzene for the preparation of crosslinked polymer beads of specific structure and crosslink density. Work was also described on the attempted use of other ion-exchange resin polymers, carboxylated polypropylene, composite ion-exchange resins, the use of absorbent carbonaceous materials, and aromatic copolyamides for membrane use.

In the session on polymeric catalysts, polymer supported rare earth metal complexes of neodymium and their use for diene polymerization, epichlorohydrin/ethylene oxide copolymers (partially substituted with imidazole) for complexing of copper (II) for the oxidative coupling of 2,6-dimethylphenol, palladium complexes on supported silica for the hydrogenation of nitro compounds, and polymer bound crown ethers were discussed. Polymeric phosphine palladium complexes were also synthesized and studied for their use as hydrogenation catalysts for nitro compounds and olefins. Some work was also concerned with the characterization of those complexes, especially the valence state of the metals in the complexes. Interesting results were found when metal clusters such as cobalt carbonyl clusters were attached onto polystyrene via the trichloroacetyl group.

Another paper described a polymer bound tetraalkylammonium reagent for the decomposition of trichloroacetic acid based on crosslinked polystyrene.

In the fourth session several aspects of photosensitive polymers were presented; in one paper the polymerization of photoactive materials such as methylisopropenyl ketone and cinnamic ester derivatives was discussed. Work was also described on positive and negative photoresists, the image formation of photosensitive films and resins for photocuring in air. Other studies included excited states in low molecular weight compounds and polymers, photoactive materials, fluorescence studies on various photoactive groups in polymers or the effect of polymers, for example, poly(methyl methacrylate) on the interaction between excited aromatic hydrocarbons and amines. Studies on nitroxyl radicals were also reported, their use for the initiation of the photopolymerization or for the inhibition of polymerization. Work on photoconduction of poly(ethylene 2,6-naphthalate) was also reported.

At the end of the meeting our Chinese colleagues concluded that the meeting had been a success; they found the interactions of their leading scientists in polymer chemistry with each other and with participating foreign scientists in this meeting most effective. From the visitors point of view it was useful to interact with our Chinese colleagues during one of their meetings and to hear firsthand about some of their work. The selection of the location and the meeting environment was very suitable for this kind of conference.

For the foreign visitors visits were arranged to Yunnan University, the Institute of Zoology, the Botanical Institute, and the Institute of National Minorities as well as to some places of cultural interest. The last day all participants went on an excursion to the famous Stone Forest, about 75 miles from Kunming, which gave additional opportunity for interaction between all participants.