

Conference Call

Polymers in Medicine, Nanotechnology, Degradation, and Stabilization

by R.D. Sanderson

The **7th Annual UNESCO/IUPAC Conference on Macromolecules** focusing on "Polymers in Medicine, Nanotechnology, Degradation, and Stabilization," took place 5–8 April 2004 in Stellenbosch, South Africa. The organizing committee comprised J. Wendorff (Phillips-University of Marburg, Germany), A.J. van Reenen (Stellenbosch University, South Africa), Aneli Fourie (UNESCO Associated Centre for Macromolecules and Materials, Chemistry & Polymer Science Division, University of Stellenbosch, South Africa), and myself.

About 200 delegates representing 19 countries other than South Africa participated in the conference. Delegates from the African continent were from Uganda, Zimbabwe, Zambia, Mauritius, Egypt, Libya, and Lesotho. Other countries represented included Russia, China, Turkey, India, France, Germany, United Kingdom, USA, Israel, Switzerland, Netherlands, Czech Republic, Denmark, Slovenia, Italy, and Australia. The total number of students who actively participated at the conference was 75.

Forty talks were presented, of which 7 were plenary lectures, 26 invited lectures, and 7 oral submissions. The talks focused on state-of-the-art activity and advancements in various fields. All others were accommodated in a lively poster session, which proved to be especially popular for student presentations.

Conference topics included polymer nanofibres and nanotubes; promising objects for applications in medicine; structure-property correlations of bone, bone-cement, and polymers; polymers in cardiovascular applications; bio-inspired cationic surfactants; facile synthesis of supramolecular materials via the ionic self-assembly route; and the effect of thermo-oxidative degradation and stabilization on the mechanical properties of polypropylene.

Bringing together experts on the same theme led to lively discussions on the preciseness of using certain techniques and also brought to light the availability of analytical subroutines on certain analytical equipment that the manufacturer often fails to explain to the customer.

The overseas plenary and invited speakers stressed the importance of postgraduate-level training in polymer science and chemistry in Africa. In particular they emphasized the importance of this field to the economies of the African continent.

An encyclopedic CD-ROM 2004 (PolymerED) for use in teaching is being created that will consist of many of the abstracts as well as conference talks. This encyclopedia provides an excellent tool for teaching and expanding course notes and will be made available to all speakers at the conference. It will be placed in an abridged form on the conference Web site after approval by each of the contributors. Abstracts and papers are being collected for peer review and will be published in a issue of *Macromolecular Symposia*.

The 8th Annual UNESCO/IUPAC Conference on Macromolecules: "Polymers for Africa," 4–9 June 2005, is scheduled to take place at Sugar Beach Resort, Mauritius.

Prof. R.D. Sanderson <rds@sun.ac.za> served as the conference chairman. He is a professor in the Department of Chemistry at the University of Stellenbosch in South Africa. He is also director of the Institute for Polymer Science and director of the UNESCO Associated Centre for Macromolecules and Materials.

Biodegradable Polymers and Plastics

by In-Joo Chin

The **Eighth World Conference on Biodegradable Polymers and Plastics** was held at Hanyang University in Seoul, Korea, from 1–4 June 2004. The conference was sponsored by IUPAC and jointly organized by the Polymer Society of Korea, Biodegradable Plastics Society Japan, BioEnvironmental Polymer Society, European Degradable Polymer Society, Korean Biodegradable Plastics Association, and Hanyang University. It brought together 238 participants from 19 countries including Japan, USA, China, Italy, Germany, Sweden, Poland, Australia, Taiwan, Thailand, UK, and the Netherlands.

Conference participation was well balanced among academia, research institutions, and industries. About half of the attendees were from abroad. The conference was co-chaired by Seung Soon Im, Department of Polymer and Textile Engineering, Hanyang University, and Young Ha Kim, Biomaterials Research Center, KIST, Seoul, Korea.

The meeting featured 36 invited lectures and almost 100 contributed oral and poster presentations,

which were classified as follows:

- Microbial Poly(hydroxy alkanoate)s
- Poly(lactic acid)s
- Biodegradable Polyesters and Polyurethanes
- Hydrogels and Biomedical Applications
- Blends and Processing
- Structure and Properties of Degradable Polymers
- Standards and Regulations

During the first session, a number of world-renowned experts reported on recent progress in biodegradable polymers and plastics:

- R. Narayan and D. Graiver—"Drivers, Standards, and Technologies for Biobased, Biodegradable Polymer Materials"
- A.-C. Albertsson—"Degradable Aliphatic Polyesters and Poly(ether-esters) for Tissue Engineering and Drug Delivery"
- Y. Doi—"Engineering and Environmental Impact of Polyester Biosynthesis from Renewable Carbon Resources"
- G. Swift—"Impact of Origin of Resources and Polymer Structure and Compositions on the Production and Availability of Biodegradable Polymers"
- G. Ghislandi and G. Floridi—"Mater-Bi Products"

It was noteworthy that a significant number of papers were presented on various aspects of microbial poly(hydroxy alkanoate)s and their copolymers:

- S.Y. Lee on the systems biological approach for the production of various polyhydroxyalkanoates by metabolically engineered *Escherichia coli*
- L.K. Nielsen on the production of PHB in sugarcane
- Noda on Nodax™ PHA copolymers and their blends
- Y. Inoue on the structure, properties and biodegradation of some bacterial copoly(hydroxyalkanoate)s.

G.Q. Chen discussed recent findings on the production of poly(hydroxybutyrate-co-hydroxyhexanoate) by recombinant *Aeromonas hydrophila* harboring genes of *phA*, *phB*, and *vgb*. H.N. Chang reported on the PHA production on an industrial scale using high-density cell culture. T. Iwata discussed the structure and biodegradability of poly[(R)-3-hydroxybutyrate] fiber and films and Y.B. Kim talked about the shape memorizing PHBVs.

Poly(lactic acid) is another important class of biodegradable polymer. P.J. Dijkstra spoke about the new developments in polylactide chemistry, S.H. Kim about the PLA synthesis in the supercritical chlorodi-

fluoromethane, and Y. Kimura about a novel synthesis approach to stereo-block PLA. Proceedings of the selected papers will be published in *Macromolecular Symposia*.

A number of leaders in the biodegradable polymers and plastics industry participated in the conference. Navamont (producer of Mater-Bi), Cargill Dow, Procter and Gamble (producer of Nodax™), BASF (producer of Ecoflex), Showa High Polymer (producer of Bionelle), Mitsui Chemicals, and IRe Chemical of Korea all presented their recent research and development activities. Also, several Korean companies such as SK Chemicals, Toray Saehan, IRe Chemical, Daesang, and Yuhan Kimberly, all members of the Korean Biodegradable Plastics Association, financially supported the conference.

Since 1989, when the series started, the conference has been held in Toronto, Canada; Montpellier, France; Osaka, Japan; Durham, North Carolina, USA; Stockholm, Sweden; Honolulu, Hawaii, USA; and Tirrenia, Italy. It was very meaningful to have the 8th World Conference on Biodegradable Polymers and Plastics in Korea, because public awareness about the reuse and recycling of sustainable resources and the preservation of the environment has been growing steadily in many Asian countries. In fact, in the session on Standards and Regulations, industrial development activities in the biodegradable plastics of Japan, China, and Taiwan were reviewed. The standardization effort in Korea was also presented.

The 9th World Conference on Biodegradable Polymers and Plastics will be held in the USA in 2006. J.L. Willett of the USDA accepted responsibility for preparing the next meeting.

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