

Advanced Materials

by Michael Hess

POLYCHAR 12, World Forum on Advanced Materials, was held 6–9 January 2004 at the University of Minho in Guimarães, Portugal. This conference was the first of the 12 in the series to be held somewhere other than its “place of birth,” the University of North Texas in Denton, Texas, USA. After Portugal, the World Forum will now start its way around the world.

The conference was organized by Antonio M. Cunha, Joao F. Mano, and Júlio C. Viana, all of whom are at the Department of Polymer Engineering at the University of Minho. Besides the location and the weather, the conference appeared not much different than other years. The conference program was divided into the following sessions:

- Predictive Methods
- Synthesis
- Nanomaterials and Smart Materials
- Mechanical Properties and Performance
- Dielectrical and Electrical Properties
- Surfaces, Interfaces and Tribology
- Rheology, Solutions and Processing
- Biomaterials and Tissue Engineering
- Natural and Biodegradable Materials and Recycling
- Characterization and Structure-Properties Relationships

All sessions consisted of oral presentations and posters. There were 2 plenary lectures and 16 invited speakers. There was a total of about 51 lectures and more than 80 poster contributions. The 100 participants and 28 students came from 28 different countries—from the United Kingdom to the Fiji Islands and from Venezuela to South Korea, literally from all parts of the world.

It is impossible to mention all the important contributions, but most of them will be published in *e-polymers* <www.e-polymers.org>. Following are a few highlighted lectures that are representative of the quality of material presented at the conference:

- Christine Ortiz, MIT, Cambridge, USA, “Ultrastructure and Nanomechanics of Biological Tissues”
- Moonhor Ree, Pohang University of Science and Technology, South Korea, “Synchrotron X-Ray Scattering Studies on Nanoporous Organosilicate Thin Films Revealing Ultralow Dielectrical Constant”
- Witold Brostow, University of North Texas, Denton,

USA, “Multiscratching as a Measure of Polymer Wear and Effects of Irradiation on Wear”

- Graham Williams, University of Wales, Swansea, UK, “Dielectric Spectroscopy and Molecular Dynamics of Polymeric Materials”
- B. W. R. Chowdari, National University of Singapore, “Polymer Electrolytes for Lithium Ion Batteries”
- Arnon Siegmann, Technion, Haifa, Israel, “Hybrid Carbon Black and Carbon Fiber Polymer Composites: Effect of Structure on Electrical Behaviour”
- Ram Prakash Singh, Indian Institute of Technology, Kharagpur, India, “Novel Applications of Drag Reducing Polymers in Agriculture”
- Timothy Lodge, University of Minnesota, Minneapolis, USA “Characterization of Intra- and Intermicellar Structure in Block Copolymer Solutions”
- Karel Dusek, Academy of Sciences of the Czech Republic, Praha, Czech Republic, “Recent Developments in Polymer Networks and Gels”
- Dusan Berek, Polymer Institute of the Slovak Academy of Sciences, Bratislava, Slovakia, “Enthalpic Partition Assisted Size Exclusion Chromatography”

This year’s Paul Flory Polymer Research Prize was shared by Timothy P. Lodge, University of Minnesota, and Karel Dusek, Academy of Sciences of the Czech Republic. There were also two winners of the Bruce-Hartmann Award for Young Scientists: Allison Saiter, University of Rouen, France, and Alexander Bismarck, Imperial College, London, UK. The Carl Klason Award for the best student was shared this year between Julien Ibarretxe Urigen, Catholic University of Leuven, Heverlee, Belgium, and Dimitre Tchalamov, University of Minho, Guimarães, Portugal. The Second Prize for a student presentation was partitioned among Michaela Avedanei, Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania; Ljerka Kratofil, University of Zagreb, Zagreb, Croatia; and Youngseok Song, Seoul National University, Seoul, South Korea.

Finally, it can be stated that POLYCHAR 12 was



Guimarães, Portugal, at night.

Conference Call

another very fruitful meeting for all participants, in particular the young scientists and the students who found a world forum to present and discuss their results, meet scientists from other countries, exchange experiences, and socialize with scientists from all fields of polymer science. Many of these contacts have led to new cooperations and exchanges among students and young and senior scientists.



Two winners of the Karl Klason Best Student Presentation Award: Julien Ibarretxe Urigen (left) and Michaela Avedanei.

The short course, which was held the day before the conference, consisted of the following sections:

- "Microscopic Techniques," S. Henning, Halle, Germany
- "X-ray Diffraction Techniques," Denchev, Guimarães, Portugal
- "Spectroscopic Techniques," Hess, Duisburg, Germany

- "Mechanical Characterization," Mano, Guimarães
- "Tribology and Volumetric Properties," Brostow, Denton, Texas, USA
- "Thermal Analysis, Gomez-Ribelles," Valencia, Spain
- "Dielectrical Relaxation," Williams, Swansea, UK
- "Transient and Quasi-Transient Dielectric Techniques," Vassilikou-Dova, Athens, Greece

Moving the conference to a different location after 12 years in Texas has made it easier for many people from other parts of the world to attend. Although it had become a tradition to hold the conference in Texas, our Portuguese friends at the University of Minho have impressively shown that hospitality, friendship, and cooperation among scientists is a world-wide phenomenon.

POLYCHAR 13 is planned for 3–8 July 2005 in Singapore; POLYCHAR 14 for April 2006 in Nara, Japan; POLYCHAR 15 for January 2007 in Rio De Janeiro; and POLYCHAR 16 for January 2008 in Vigyan Bgavan-New Delhi.

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