

Editorial to Special DYFP2009 Issue

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Introduction

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This special issue contains selected papers presented at the 14th Conference on Deformation, Yield and Fracture of Polymers, which took place in the Rolduc Abbey in Kerkrade, the Netherlands (April 6–9 2009). This tri-annual conference, generally referred to as the “Churchill” conference, has been established as the leading conference on its subject worldwide.

The 2009 conference was organized by the Materials Technology Group of Eindhoven University Technology and the scientific program was elaborated by Costantino Creton of the ESPCI in Paris and Leon Govaert of the Materials Technology Group to the satisfaction of all participants. The single session program was a mix of invited and contributed lectures on the following selected themes: Ab Initio and Mesoscale Modelling of Polymers, Deformation of glasses on a Molecular Scale, Predicting Properties of Solid Polymers, Fracture of Polymers, Semi-Crystalline Polymer Systems, Crosslinked Systems & Networks, Biomaterials and Applications, Gels and Bio-Polymers, Thin Films, Interfaces & Adhesion, Nanocomposites and Indentation & Wear.

The conference was a great success in this period of economic crisis and was attended by 183 participants (20 countries, Europe 155, outside Europe 28), a nice international mix of experienced and young faculty, post-doctoral research-

ers, Ph.D. students, and industrial researchers. The papers contained in this special issue provide an insight in the new developments presented at the conference.

Although the scope of the meeting is, as always, very general and promotes high quality science in all aspects of deformation, yield and fracture of polymers, some topics have clearly emerged more specifically from the Rolduc meeting. The in-situ scattering techniques during deformation and yielding are particularly strong in the area of semi-crystalline materials (see Deplace et al., Humbert et al. for example). Some relatively novel characterization techniques to characterize microstructure and the extent of internal damage in polymers have appeared, such as X-ray tomography (Wismans et al. and Laraininadrasana et al.). The mechanical properties of soft materials such as rubbers (Merabia et al., Cristiano et al., l'Abée et al. and Marano et al.) and polymer gels (Seitz et al. and Zimmerlin et al.) are taking a larger part of the conference. These new topics are presented alongside more classical topics of the Churchill conference such as molecular (Ge & Robbins) and macroscopic modeling of Large strain deformation in polymer glasses (see de Focatiis et al., Senden et al. and Wendtland et al.). Finally the special issue includes a study of polymer friction on snow (Giesbrecht et al.).

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COSTANTINO CRETON

Costantino Creton is currently C.N.R.S directeur de recherche at ESPCI Paris-Tech in France. He obtained an engineering degree in Materials Science from the Ecole Polytechnique Fédérale de Lausanne (Switzerland) in 1985 and his M.S. and Ph.D. in Materials Science and Engineering at Cornell University in 1991 under the supervision of Professor Edward J. Kramer. After a one year postdoc at the IBM Almaden Research Center in San Jose, he joined the ESPCI in Paris first as a postdoctoral associate in 1993 and, since 1994, as a C.N.R.S permanent researcher. His research interests include mechanical properties of polymers at interfaces, adhesion of polymers, and deformation and fracture of soft polymer networks. He has received the Polymer Prize from the French Polymer Group in 2002, the Prix Dédale of the French Adhesion Society in 2007, and the Journal of Polymer Science Polymer Physics award in 2008.



LEON E. GOVAERT

Leon E. Govaert is associate professor in polymer mechanics. He studied Mechanical Engineering at the Eindhoven University of Technology and received his Ph.D. degree from the same university in 1990, with Prof. Dr. P. J. Lemstra and Prof. Dr. Ir. M. J. W. Schouten as his advisors. Next he joined the Polymer Technology group at the Department of Mechanical Engineering, Eindhoven University of Technology. His present research interests include constitutive modelling, long-term failure of solid polymers and its relation to the molecular and micro-structural characteristics of the material.