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14TH INTERNATIONAL SCIENTIFIC CONFERENCE ON "POLYMERIC MATERIALS"

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14th International Scientific Conference on "Polymeric Materials" was held on September 15-17, 2010 in Halle (Saale), Germany. This conference was organized by Martin Luther University Halle-Wittenberg and Polymer Competence Center Halle-Merseburg in cooperation with Innovation Center Polymer Technology.

Prof. Hans-Joachim Radusch (Polymer Competence Center Halle-Merseburg) was the conference chairman. World well-known scientists were members of the Program Committee: Rene Androsch, Michael Bartke, Mario Beiner, Wolfgang Grellmann, Thomas Groth, Jürg Krejler, Goerg Michler, Wolfgang Paul, Thomas Thurn-Albrecht, Ralf Wehrspohn.

About 350 participants from 100 research centers of 20 countries (Germany, Russia, Vietnam, Japan, France, Georgia, Czech Republic, Romania, Uzbekistan, Iran, Poland, Austria, USA, Hungary, South Africa, Algeria, South Korea, Ukraine) took part in this conference.

4 Plenary lectures, 17 keynote lectures, short presentations and poster sessions presented research works in such fields as:

- Polymer Chemistry
- Polymer Physics
- Polymer Engineering
- Polymers in Energy Engineering

Fundamentals of fine particle mixing in polymers were discussed in the first plenary lecture (Manas-Zloczower I., Cleveland, USA). The second plenary lecture was about actively moving polymers (Lendlein A.; Behl M., Teltow and Berlin, Germany). The topic of the third plenary lecture was "Macromolecules, assemblies, particles – a discovery journey in materials synthesis (Klapper M.; Weil T.; Mullen K., Mainz, Germany). The last plenary lecture was devoted to making polymers swim (Mykhaylyk O.O.; Ryan A., Sheffield, UK).

Symposium "Polymer Chemistry" focused on the following topics:

- Synthesis and Characterization
- Biobased Polymers
- Polymers in Biomedical Application
- Modification & Interfaces

This symposium included 4 keynote lectures and 20 short lectures. Barner-Kowollik C.; Inglis A.J.; Nebhani L.; Blinco J.; Paulohrl T.; Glassner M. (Karlsruhe, Germany) gave keynote lecture about constructing functional materials via (reversible) diels-alder chemistry. Internal composition and mechanical properties of polyelectrolyte multilayer films containing polysaccharides were discussed in the keynote lecture of Picart C.; Boudou T. and Crouzier T. (Grenoble and Montpellier, France). Fink H.-P.; Ganster J. and Engelmann G. (Potsdam-Golm, Germany) spoke about biobased polymers and composites. The last keynote lecture of this symposium was devoted to the influence of stearic acid coating on the viscosity of hydrated filler suspensions (Focke W.W.; Molefe D.; Labuschagne F.J.W.; Ramjee S., Pretoria, South Africa)

The short lectures of this symposium were devoted to the next problems: polymer material design via topological control using RAFT polymerization; effects of electric fields on block copolymer nanostructures; block copolymer nanotubes by melt-infiltration of nanoporous aluminum oxide; multifunctional dendritic polyglycerol architectures for drug and dye delivery; protein folding and misfolding studied by NMR spectroscopy; synthesis and properties of triphilic polymers; HB polymers in coatings and thin film application.

Symposium "Polymer Physics" included topics:

- Theory & Modelling
- Polymer Dynamics
- Novel Experimental Techniques
- Structure & Morphology

4 keynote and 26 short lectures were presented during this symposium. The title of the first keynote lecture was "60 years after Flory's ideality hypothesis: Are polymer chains in a melt really ideal?" (Meyer H.; Wittmer J.P.; Johner A.; Obukhov S.P.; Farago J.; Baschnagel J., Strasbourg, France; Gainesville, USA). Lequeux F. (Paris, France) spoke how filled elastomer mechanical properties are controlled by the glassy dynamics around the nanoparticles. Polymer crystallization studied at processing relevant scanning rates (<106 K/s) was discussed in the keynote lecture of Schick C. and Zhuravlev E. (Rostock,

Germany). The last keynote lecture of this symposium was about evaluation of network structure and physical properties of Tetra-PEG gel (Sakai T.; Agaki Y.; Matsunaga T.; Tsutsui Y.; Shibayama M.; Chung U., Tokyo, Japan)

The short lectures of this symposium were devoted to the next problems: swelling behavior of a new class of biohybrid networks; characterization of gas sorption in glassy polymers using experimental and molecular modeling techniques; reversible structuring of photosensitive polymer films by surface plasmons; chain dynamics of polymers confined to ordered nanoporous alumina membranes; distribution of relaxation times in a polymer melt and in miscible polymer blends close to the glass transition; atomic force microscopy studies on the morphology of polymeric thermotropic glazing for overheating protection applications; new methods for monitoring structure evolution in composite fibers by X-ray scattering; direct imaging of nanoscale deformation processes in elastomeric polypropylene; study on microstructure development of PP/PET blend nanocomposite fibers.

The topics of Symposium "Polymer Engineering" were:

- Polymer Processing and Rheology
- Advanced Polymer Materials & Applications
- Polymer Blends & Nanocomposites
- Polymer Properties, Testing and

Characterization

This symposium included 5 keynote and 37 short lectures. The title of the first keynote lecture was "Advanced performance of single screw extruders: High speed and alternative extrusion concepts" (Wortberg J.; Gorczyca P.; Gromann M., Duisburg, Germany). Orth P. (Frankfurt, Germany) spoke about plastics and climate protection. Thermal degradation and combustion behavior of polypropylene/multiwalled carbon nanotube composites were discussed in the keynote lecture of Zaikov G.E.; Rakhimkulov A.D.; Lomakin S.M.; Dubnikova I.L.; Shchegolikhin A.N.; Davidov E.Y. and Kozlowski R. (Moscow, Russia; Poznan, Poland). The topic of the next keynote lecture was "New insights into polymer-particle nanocomposites: From nano-scale polymer-mediated interactions to macro-scale structural organization" (Heinrich G.; Chervanyov A.; Saphiannikova M.; Richter S.; Stockelhuber K.W., Dresden, Germany). The last keynote lecture was about fatigue behavior of polymer blends and nanocomposites (Altstadt V.; Fischer F.; Gotz C.; Wolff-Fabris F., Bayreuth, Germany).

The short lectures of this symposium were devoted to the next problems: using pressure dependent viscosity for

improving the temperature calculation of single screw extruders; calender lines inline-control of materials data by process viscometer; viscoelastic behavior of polymer based electrorheological fluids; physical foaming of advanced polymer materials; analysis and modeling of the heating and sealing behavior of polymer films during ultrasonic sealing; modification of reinforcing materials by plasma; filler design for layered double hydroxide nanocomposites; influence of halogen free flame retardant additives on compact and expanded polyester material; influences of polymer matrix melt viscosity and molecular weight on MWNT agglomerate dispersion; time dependent reinforcement effect of nanoclay in rubber composites; a new fatigue test machine for accurate crack growth analysis in rubber compounds; gradients in composition, morphology and properties of semicrystalline polymers.

Symposium "Polymer in Energy Engineering"

focused on the topics:

- Polymers for Energy Transportation
- Polymers for Energy Storage
- Polymers for Regenerative Energy Production
- Polymers for Advanced Batteries

This symposium included 3 keynote and 7 short lectures. Lang R.W.; Wallner G.M. (Linz, Austria) gave the keynote lecture about polymeric materials for solar energy application. Novel (co)polymers containing the fluorene building block were discussed by Scherf U. (Wuppertal, Germany). The topic of the last keynote lecture of this symposium was "Block copolymers beyond templating – merging structure and function" (Gutmann J.S., Mainz, Germany).

The short lectures of this symposium were devoted to the next problems: correlation of electrical conductivity and mechanical properties of electroconductive composites based on elastomeric or thermoplastic matrices; polymers as solar cell encapsulate materials for application in photovoltaic modules; aging behavior of polymeric absorber materials for solar thermal collectors; investigations of structural changes by modifications of polymer systems for photovoltaic applications; development and characterization of advanced silicon based thermoplastic elastomers for PV encapsulation; side-chain sulfonated poly(ether sulfone)s for PEMFC applications.

Poster session included 153 presentations.

The next conference will be held in 2012 again in Halle-Saale.

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