**Polychar 26 World Forum on Advanced Materials**

by the Polychar World Forum Scientific Committee

The 26th Annual Polychar World Forum on Advanced Materials (derived from **Poly**mer **Char**acterization) was hosted by the Ivane Javahishvili University, Tbilisi, Republic of Georgia, September 10 - 13, 2018. Nearly 300 scientists from 27 countries have participated.

It is the philosophy of Polychar to visit a different part of the world each year and to give in particular students and young scientists from all over the world an opportunity to present their scientific work to a large international audience, to meet prominent scientists, and to attend a tutorial held by international well-known scientists, the Monday Course on Polymer Characterization, see below.

The previous conferences had been held in Denton, Texas, (where the Forum has been founded in 1992), Guimaraes, Portugal (2004), Singapore (2005), Nara, Japan (2006), Buzios,

Brazil (2007), Lucknow, India (2008), Rouen, France (2009), Siegen, Germany (2010), Kathmandu, Nepal (2011), Dubrovnik, Croatia (2012), Gwangju, South Korea (2013),

Stellenbosch, South Africa (2014), Lincoln, Nebraska, USA (2015), Poznan, Poland (2016) and Kuala Lumpur, Malyasia (2017).

The Monday Course on Polymer Characterization had the following program:

\* Victor M. Castaño, National University of Mexico, Polymers, biopolymers and advanced nanocompo­sites for additive manufacturing: challenges and opportunities

\* Tomasz W. Liskiewicz, University of Leeds, Tribology: friction, scratch resistance and wear

\* Witold Brostow, University of North Texas, Viscoelastic behavior of polymers

\* Masaru Matsuo, University of Dalian, Understandable approach to electric and dielectric properties of conductive filler-polymer composites in terms of elementary quantum mechanics

\* Rimantas Levinskas, Lithuanian Energy Institute, Kaunas, Application of polymeric materials in energetics sector

\* Allison T. Osmanson, University of North Texas, Flexibility and related properties of polymers

\* Tomasz Sterzynski, Poznan University of Technology, Macromolecular orientation in polymers

\* Dusan Berek, Institute of Polymers, Slovak Academy of Sciences, Bratislava, Polymer liquid chromatography

As each year, it is difficult to provide flavor of the Forum – given space for naming only some

of the presentations; however, see also the Prizes listed below. Here is a selection:

**\* Khatuna Barbakadze**, Ivane Javahisvili University, Tbilisi, Development and properties of antimicrobial hybrid composite films for control of biocorrosion processes

**\* Rachele Castaldo**, Institute of Polymers, Composites and Biomaterials, Pozzuoli, Functional hyper-crosslinked resins with tailored absorption properties for environmental applications

**\* Nandika A. D'Souza**, University of North Texas, Thermoset and thermoplastic foams for building applications

**\* Narine Durgaryan**, Yerevan National University, Aromatic diamines as monomers for the synthesis of electroconductive polymers

**\* Marina Gahutishvili**, Ivane Javahisvili University, Tbilisi, Silver-arsenic and gold-arsenic nanoparticles in polymeric matrices

***\** Regina Jeziorska**, Industrial Chemistry Research Institute, Warsaw, Polyolefin composites with increased resistance to microorganisms: structure−property relationships.

\* **Ondrej Kylian**, Charles University, Prague, Plasma polymers – from thin films to nanoparticles and nanocomposites

\* **Marino Lavorgna**, Institute of Polymers, Composites and Biomaterials, Portici*,* Multifunctional polymer nanocomposites based on graphene and its derivatives**:** the key role of filler distribution

\* **Laurent Lebrun**, Normandy University, Mont-Saint-Aignan, Polymer membranes containing ionic liquids carriers for metal ions extraction

**\* Liubov Myasnikova**, Abram Ioffe Institute, Saint-Petersburg, In situ synchrotron study of heating of a single nascent ultrahigh molecular weight polyethylene particles

**\* Omar Mukbaniani**, Ivane Javahisvili University, Tbilisi, Brush-type fluorine containing polymer electrolyte membranes

**\* Aleksandra Nesic**, University of Conception, Coronel, Development of PLA films loaded with grapevine cane extract for food packagingapplications

**\* Luciana S. Spinelli**, Federal University of Rio de Janeiro, Acrylamide copolymers for treatment of oily waters

**\* Stanislav Patlazhan**, Nikolay Semenov Institute of Chemical Physics of Russian Academy of Sciences, Moscow, Microhydrodynamics of shear thinning fluids past superhydrophobic walls: numerical modeling

**\* Ewa Piórkowska**, Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, Crystallization and properties of star-shaped and linear poly(l-lactide)s

The Prize Committee chaired by **Liubov Myasnikova**, Abram Ioffe Institute, Saint-Petersburg, awarded the following prizes:

The prestigious **Paul J. Flory Polymer Research Prize** went to **Jean-Marie Marquez**, University of Mons, for his pioneering work on spontaneous self-healing polyurethanes

The equally prestigious **Svante Arrhenius International Prize** went to **Ramaz Katsarava**, Agricultural University of Georgia, Tbilisi, for his creation of pseudo proteins for biomedical applications

The **Bruce Hartmann Young Scientist Prize** went to **Gleb V. Vaganov**, Institute of Macromolecular Compounds of the Russian Academy of Sciences, Saint-Petersburg, for his work on synthesis and characteristics of a new polyimide powder for selective laser sintering

The **Jürgen Springer Young Scientist Prize** went to **Daniel Tobola**, Institute of Advanced Manufacturing Technology, Cracow, for his work on wear and friction of Vanadis 6 tool steel after combined surface treatments

Three **Carl Clason Student Awards** went to

**Tengiz Kantaria**, Agricultural University of Georgia, Tbilisi, for his work on new polymer synthesis via alkylene-azide step growth click polymerization

**Karsten Leucker**, Friedrich Alexander University of Erlangen-Nuremberg, for his work on correlations of bonding area and pilling behavior of polypropylene nonwovens

**Tatiana S.L. Maravilha**, Federal University of Rio de Janeiro, for her work on synthesis and characterization of polymers based on cardanol and their influence on the adsorption of asphaltenes in kaolinite

Three **Student Diplomas of Distinction** went to

**Nathalie Hnatchuk**, University of North Texas, for her work on preventing thermal degradation of PVC insulation by mixtures of cross-linking agents and antioxidants

**Lukasz Majewski**, Lublin University of Technology, for his work on plasticising and mixing zone of a co-rotating twin-screw extruder

**Neda Radovanovic**, University of Belgrade, for her work on active agar mineralized composite films for food packaging

Participants have praised this year Forum as 'wonderful' - providing several reasons. First, the warm hospitality of the Georgians in general - and of Omar Mukbaniani, Tamara Tatrishvili and Marina Gahutishvili in particular. Second, the charming city of Tbilisi, founded in the 5th century, with varied architecture reflecting its history. Third, because - true to its name - at our Forum the latest important developments in worldwide Materials Science and Engineering have been reported, including: a self-consistent theory of the electrical conductivity of carbon-fiber filled thermoplastics - transferable to other properties - from the University of Erlangen- Nuremberg; advanced manufacturing of polymers, biopolymers and nanocomposites from the National University of Mexico; an equation defining flexibility - following an earlier equation defining brittleness of polymers - from the University of North Texas; pseudo proteins from the Agricultural University of Georgia. Fourth, some amazingly original international collaborations have been initiated during our Forum.

Scientific Committee (SciCom) of our Forum had its usual meeting. With a resignation and retirements, an updated Board was defined with the following Vice Presidents: Victor M. Castaño, National University of Mexico; Jiasong He, Institute of Chemistry of the Chinese Academy of Sciences, Beijing; Elizabete F. Lucas, Federal University of Rio de Janeiro; and Dirk W. Schubert, Friedrich Alexander University of Erlangen-Nuremberg. Witold Brostow remains as the SciCom President.

As usual, at the closing ceremony Prize winners received their prizes and an invitation to all for the next year was issued. Polychar 27 will take place in Naples-Pozzuoli October 14-18, 2019. More in detail: Monday will be the Course on Polymer Characterization, Tuesday-Thursday the Forum proper, and Friday the optional excursion in the Naples area. Naples is easily accessible by air, for instance with 3 daily flights back and forth between Munich and Naples.