

3rd Eurosummer School on Biorheology & Symposium on Micro and Nanomechanics and Mechanobiology of Cells, Tissues and Systems

Conference Report II

BOROVETS, BULGARIA
AUGUST 29 – SEPTEMBER 2, 2009

The 3rd Eurosummer School on Biorheology & Symposium on Micro and Nanomechanics and Mechanobiology of Cells, Tissues and Systems was held in the Hotel Samokov at Borovets Resort in Rila Mountain, Bulgaria from August, 29 to September 2, 2009 (<http://www.biorheo2009.bsb-bg.eu>). This meeting was the third, organized by the Bulgarian Society of Biorheology in cooperation with the European Society for Clinical Hemorheology and Microcirculation (ESCHM) and Co-Organizer the Institute of Mechanics and Biomechanics to the Bulgarian Academy of Sciences. The meeting was held two months after the 15th Conference of the European Society of Clinical Hemorheology and Microcirculation in Pontresina, Switzerland (see *Applied Rheology* 19 (2009) 312–313) and just before the 11th National Congress on Theoretical and Applied Mechanics in Borovets (September 2–5, 2009).

The aim of the meeting was to get closer clinical, applied and fundamental biorheological, micro and nanomechanical and mechanobiological studies, promising new therapeutical developments and to focus researchers on the influence of the mechanical forces on cells, tissues and biological systems as well as instrumentation development. The meeting aimed to ensure continuity of the previous Eurosummer Schools on Biorheology, held in 2003 and 2006 in Sofia and Varna, Bulgaria and to strengthen the international collaboration and contacts in this field. Not at the end the meeting aimed to encourage students, postgraduate students and young researchers in their studies too. The meeting was important for the future investigations and collaboration in this area preparing the next 16th meeting of the ESCHM which will be a joint meeting with the International Society of Clinical Hemorheology and Microcirculation (ISCH) and the International Society of Bioreology (ISB) and will be held in Munich in 2011.

More than 50 participants from 13 countries (Bulgaria, France, Germany, Greece, Hungary, Israel, Italy, Nigeria, Portugal, Russia, Turkey, UK, and USA) gathered in the beautiful Borovets resort. The 65 presentations scheduled (17 lectures, 27 communications and 21 posters) from 18 countries (Belarus, Bulgaria, Czech Republic, France, Germany, Greece, Guadeloupe, Hungary, Israel, Italy, Jordan, Nigeria, Poland, Portugal, Russia, Turkey, UK, USA) reflect the breadth of interests in this field. The Scientific program of

the 3rd Eurosummer School on Biorheology & Symposium on Micro and Nanomechanics and Mechanobiology of Cells, Tissues and Systems included plenary lectures, sessions, oral communications and posters. It was published in a Book of abstracts and were available during the meeting. The presented at the meeting lectures, communications and posters will be published in *J. Series of Biomechanics*.

Sixteen plenary lectures were delivered by well-known scientists in the field. Prof. Sandro Forconi (Siena, Italy) presented “Evolution of the meaning of hyperviscosity in the pathophysiology of microcirculation: The Poiseuille’s formula from 1828 to 2009”. Acad. Yatchko Ivanov (Bulgarian Academy of Sciences, Sofia/Bulgaria) reported on “On the use of polymer gels for biomedical applications”. A comprehensive lecture on “Blood modeling and flow studies in models of the cardiovascular system” was delivered by Prof. Dieter Liespich from the Institute of Biotechnik, Feldafing/Germany. A theory of “Channeling in sedimenting blood” was presented by Prof. Alexander Pribush (Israel). Prof. Eugeny Roitman (Moscow/Russia) read a lecture on “Hemorheological and microcirculating responses to some pathophysiological factors in major surgery”. Prof. Marina Kameneva (Pittsburg/ USA) delivered two lectures on: “Hemorheology and biocompatibility concerns in development of pediatric circulatory-assist devices” and “Drag reducing polymers in blood microcirculation in vitro and in vivo”. The lectures on “Haemorheology in the neonate and the foetus” of Prof. Mike W. Rampling (London/UK) and on “Interaction of blood with body foreign surfaces – haemocompatibility” of Prof. F. Jung (Germany) were presented too at the meeting. Dr. Jean-Frederic Brun (Montpellier/France) held two lectures on “Insulin resistance as a hemorheological disease” and “Whole body bioimpedance as a mirror of hemorheological factors on electric properties of blood: A step forward with the Hanai’s mixture conductivity theory”. A lecture on “Main hemorheological problems in disorders of social significance” was read by Dr. E. Zvetkova (Sofia/Bulgaria). Prof. Carlota Saldanha (Lisboa/Portugal) delivered a lecture on “Erythrocyte Deformability Responses to Shear Stress under External and Internal Stimuli Influences”. Prof. Sami Aydogan (Kayseri/Turkey) presented a lecture on “Carnosine as a protective agent: the importance for red

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Figure 1 (left above): Minutes from the 3rd Euro-summer School on Biorheology & Symposium: Participants in the meeting delivered their presentations into fruitful scientific discussion.

Figure 2 (right above): Borovets Resort near Samokov, Bulgaria (1300 m above sea level).

Figure 3 (left below): A view from the Rila mountain at 2340 m above sea level.

Figure 4 (right below): Along the picturesque river Beli Iskar near Borovets resort.



blood cell rheology". An overview on "Antioxidant defence system and erythrocyte deformability" was delivered by Dr. M. Betul Yerer-Aycan (Kayseri/Turkey). Prof. Y. Nyashin (Perm/Russia) read a lecture on "Modern Trends in Biomechanics of the Dentofacial System". Finally Prof. S. Stoytchev (Institute of Mechanics and Biomechanics, Bulgarian Academy of Sciences, Sofia/Bulgaria) held a lecture on "Arterial wall shear stress and its dependence on the bypass diameter".

Other well-known researchers in the field of biorheology as Dr. Norbert Nemeth from Hungary and Dr. I. Velcheva from the Medical University in Sofia presented their recent scientific achievements. Five sessions were organized: "Hemorheological disturbances in different pathologies" (Chairpersons: J.F. Brun and N. Nemeth), "New approaches for quantification of microrheological phenomena" (A. Pribush and M. Yianneskis), "Cell interaction and adhesion" (C. Saldanha and S. Aydogan), "Mechanical characteristics and modeling of tissues and systems" (Yu. Nyashin and S. Stoytchev), and a poster session too (M. Kameneva and N. Antonova).

The scientific program included also and a Young scientists' competition for the best scientific work. Students, Ph.D. students and young researchers from Wells, UK, Germany, Russia, Turkey, Finland, and Nigeria submitted in advance their works. After a comprehensive review and discussion Dr. Bernhard Hiebl from Center for Biomaterial Development and Berlin-Brandenburg Center for Regenerative Therapies

(BCRT), Institute for Polymer Research, GKSS Research Center GmbH, Teltow/Germany and Daniel J. Curtis from the Multidisciplinary Nanotechnology Centre, Swansea University, Singleton Park, Swansea/UK were awarded with the first award. Sophya Y. Rykova from the Institute of Mechanics, Lomonosov Moscow State University, Moscow/Russia and Dr. M. Betul Yerer-Aycan from the Erciyes University, Faculty of Pharmacy, Department of Pharmacology, Kayseri/Turkey were awarded with the second award. Dr. A. P. Popov from the Optoelectronics and Measurement Techniques Laboratory, Faculty of Technology, University of Oulu/Finland and Dr. Olutayo Ifedayo Ajayi from the University of Benin, Benin City/Nigeria were awarded with the third award.

The participants delivered their presentations in the atmosphere of fruitful scientific discussion. They found the meeting convincing and rewarding and Borovets resort provided excellent conditions for an extensive exchange of views and personal contacts. The participants relaxed during a picnic to ecological pathway along the picturesque river Beli Iskar and enjoyed the excursion to the Rila monastery, organized for them. There was an interest from the most of them in the next similar meetings to be held the future.

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