



MIĘDZYNARODOWE CENTRUM BIOCYBERNETYKI

INSTYTUT BIOCYBERNETYKI I INŻYNIERII BIOMEDYCZNEJ

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157th ICB SEMINAR

NANOPARTICLES AND NANOTECHNOLOGY FOR BIOMEDICAL ENGINEERING, BIOTECHNOLOGY AND MEDICINE

A symposium to address new ways of biomedical research

Location: Nalecz Institute of Biocybernetics & Biomedical Engineering
Polish Academy of Sciences PAS
4 Trojdena Street
02-109 WARSAW / POLAND

Date: October 15-17, 2017

Chairmen: Assoc Prof. Ludomira H. Granicka, Warsaw, Poland
Prof. Wojciech Piątkiewicz, Warsaw, Poland
Prof.Dr. Jörg Vienken, Usingen, Germany

PROGRAM OF THE SEMINAR

SUNDAY, 15 October 2017

Arrival of Participants

MONDAY, 16 October 2017

08:30 - 09:15 Registration at IBBE PAS Premises

OPENING OF THE SEMINAR

09:15 – 09:30

WELCOME ADDRESS by Piotr Ładyżyński (Poland)

Director of the International Centre of Biocybernetics

Session I **NANOPARTICLES & NANOFIBERS & SURFACE MODIFICATIONS OF POLYMERS FOR MEDICAL APPLICATIONS I**

Chairmen: Assoc. Prof. L. Granicka, Warsaw
Prof. W. Piątkiewicz, Warsaw

09:30 - 10:00 **Prof. Dr. Mathias Ulbricht** (University of Duisburg-Essen, Duisburg, Germany)
“Advanced polymer-based membranes with tailored barrier and surface properties”

- 10:00 - 10:05** **Discussion**
- 10:05 - 10:35** **Prof. Aharon Gedanken** (Bar-Ilan – University, Ramat Gan, Israel)
“Making the hospital a safer place by sonochemical coating of all textiles and medical devices by antibactericidal nanoparticles”
- 10:35 - 10:40** **Discussion**
- 10:40 - 11:10** **Prof. Dr. Jörg Vienken** (Usingen, Germany)
“Biomaterials and blood compatibility: Synergies and controversies”
- 11:10 - 11:15** **Discussion**
- 11:15 - 11:45 *COFFEE BREAK (30 min.)*
- 11:45 - 12:15** **Prof. Witold Łojkowski** (Institute of High Pressure Physics PAS, Warsaw, Poland)
“Sonocoating of 3D printed scaffolds and nanofibers with nano-hydroxyapatite for osteoinductivity of implants”
- 12:15 - 12:20** **Discussion**
- 12:20 - 12:50** **Assoc. Prof. Tomasz Ciach** (Faculty of Chemical and Process Engineering Warsaw University of Technology, Poland)
“Surface modification for medical devices and implants”
- 12:50 - 13:00** **Discussion**
- 13:00 - 14:15 *LUNCH BREAK (75 min.)*

Session II NANOSYSTEMS FOR PROCESS REGULATION

Chairmen: Prof. Dr. J. Vienken, Germany
 Prof. A. Chwojnowski, Poland

- 14:15 - 14:45** **Assoc. Prof. Ludwika Lipińska** (Institute of Electronic Materials Technology (ITME), Warsaw, Poland)
“Biomedical applications of graphene: Cancer therapy and tissue engineering”
- 14:45 - 14:50** **Discussion**
- 14:50 - 15:20** **Dr. Nizamieva Augul Alfredovna** (MIPT Dolgoprudny, Russia)
“Conduction pathways in rat cardiac cell culture”
- 15:20 - 15:25** **Discussion**
- 15:25 - 15:55** **Prof. Tomasz R. Sosnowski** (Faculty of Chemical and Process Engineering, Warsaw University of Technology, Poland)
“Dynamic interfacial characteristics of the lung surfactant contaminated by nanostructured particles”
- 15:55 - 16:00** **Discussion**

12:25 - 12:55 **Dr Katarzyna Matusiak** (Department of Medical Physics and Biophysics, Faculty of Physics and Applied Computer Science AGH, Cracow, Poland)
“Temporary and long-term changes occurring in selected rat organs after the exposure to iron oxides nanoparticles with different coatings”

12:55 - 13:00 **Discussion**

13:00 - 14:00 *LUNCH BREAK (60 min.)*

Session V FROM INVENTION TO IMPLEMENTATION

Chairmen: Prof. W. Piątkiewicz, Poland
 Assoc. Prof. L. Granicka, Poland

14:00 - 14:30 **Prof. Aharon Gedanken** (Bar-Ilan University, Ramat Gan, Israel)
“Novel methods (Microwave, radiation, sonochemistry and hydrothermal), reactions for the conversion of biomass to biofuel and fine chemicals”

14:30 - 14:35 **Discussion**

14:35 - 15:05 **Prof. Andrzej Chwojnowski** (IBBE PAS, Warsaw, Poland)
“Application of 3D membranes for repair of articular cartilage defects”

15:05 - 15:10 **Discussion**

15:10 - 15:40 **Assoc. Prof. Tomasz Ciach** (Faculty of Chemical and Process Engineering Warsaw University of Technology)
“Innovations: a long way from universities to the market”

15:40 - 15:45 **Discussion**

15:45 - 16:15 **Prof. Dr. Jörg Vienken** (Usingen, Germany)
“The new European Medical Device Regulation (MDR): Stresses, challenges and assets”

16:15 - 16:25 **Final Discussion**

16:25 – 16:35 **Closing remarks** by Prof. Dr. J. Vienken, Prof. W. Piątkiewicz and Assoc. Prof. L. Granicka