*The **CREA**tion of the Department of Physical Chemistry of Biological Sys**TE**ms [CREATE]*

666295 — CREATE — H2020-WIDESPREAD-2014-2015/H2020-WIDESPREAD-2014-2

Visit of prof. Tomasz Ciach - report

[WP5]

Level of dissemination: PUBLIC

Warsaw, June 2019

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 666295

CREATE lecture ”Innovation source”

The seventh open lecture under a series of “*Innovation source*” was held on June 11th, 2019 at the Institute of Physical Chemistry PAS (IPC). The purpose of the above series of lectures is to update scientists’ knowledge of current technological trends and innovation in chemistry-related sectors, as well as establishment of relations with business.

Professor Tomasz Ciach was invited to the Institute by the CREATE Project Coordinator and the ERA Chair holder, professor Robert Holyst and professor Maciej Wojtkowski, respectively.

Tomasz Ciach is a professor at the Warsaw University of Technology, head of the BioMedLab and the division of Biotechnology and Bioprocess Engineering at the Faculty of Chemical and Process Engineering. He has broad experience in applying scientific knowledge in practice. He founded his first company during his doctoral studies. The profile of the company was design and manufacture of custom made electronic equipment for laboratories worldwide. Some results of his PhD thesis served as base for water filter production facility at Amazon UK. His scientific carrier was focused on medical biotechnology and biomedical engineering.

He has developed a few technologies that were launched into the European medical market. The first of these technologies was the coating technology for drug eluting coronary stents that prevent stent restenosis. This technology was introduced at Balton company - a manufacturer of disposable medical equipment for anesthesia, dialysis, surgery, gynecology, cardiology, radiology and urology. Products developed using this technology are sold in and outside the EU. The second technology was a biocompatible coating for urological catheters, this coating eliminates pain during catheterization and prevents bacterial infections of the urinary tract. This technology was introduced at Galmed - company specializing in the production of disposable medical equipment. The catheters produced by this technology are sold in the EU, mainly in Germany and the UK.

Professor Ciach has also funded or co-founded a few university spin-off and start-up companies. Among others:

- NanoVelos developing polysaccharide nanoparticles for cancer treatment and nucleic acids delivery (multinational patent protection) - the company has currently been preparing to start human trials.
- NanoThea, company developing nanoparticles for early diagnosis of cancer.
- NanoSanguis, developing synthetic oxygen nano-carriers for long-term storage of human organs and production of synthetic blood replacement for humans.

Some of the Nano startups were introduced on the Warsaw Stock Exchange as a holding - NanoGroup.

The main **goal of the visitof professor Ciach ti IPC was to deliver a** lecture entitled “***From labs to hospitals, a long and complex journey***”. The whole society of IPC, with IPC researchers and doctoral students, was invited (and 61 persons signed on the attendance list).

The seminar of prof. Tomasz Ciach, assembly hall, the 11th June, 2019.

Abstract of the seminar

Lecture “From labs to hospitals, a long and complex journey” describes the current situation in knowledge transfer from academic and scientific institutes to industrial practice and finally to hospitals. It presents typical routes: patenting, licensing, founding spinoff and startups, as a way to make use of scientific research results in industry and business. Lecture also includes description of the driving force for the process of knowledge transfer – national and private

money sources as well as universities and companies incomes and licensing rates. The lecture will mainly focus on problems and examples from medical biotechnology and bioengineering areas. All data and examples are presented as comparison between America, Europe and Polish scientific and business environments with examples of researchers and companies, presenting successful and unsuccessful stories from these markets. It is also a source of practical information for everybody who wants to follow the dark side of science.

After the seminar discussion between dr Jan Paczesny, prof. Tomasz Ciach and prof. Robert Hołyst took place.

Discussion between dr Jan Paczesny, prof. Tomasz Ciach and prof. Robert Hołyst, (from left).

The discussion focused on possible applications of nanocomposite coatings developed at IPC. These type of coatings was published in *ACS Applied Materials & Interfaces* (2015, 7(7), p. 3931) and patented in PCT/EP2013/075709 (patent obtained in November 2018). Professor Ciach suggested to apply this nanocomposite coatings inside the catheters to reduce the risk of biofilm formation. The scientists agreed to conduct preliminary research on this topic in cooperation between the IPC and the Warsaw University of Technology.