*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

1st Report on promotion of visibility & excellence

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1. Introduction

This document consists of specification of activities aimed at promotion of the new Departure and new IPC smart specialization:

- organization of local events,
- scientific CHAIRS,
- popular science lectures,
- press notes and information releases.

2. Promotion of visibility & excellence

2.1 Organization of local events

Open Days in IPC

To promote the new Department, new specialization and the Institute the Open Days in X-ray lab [headed by Dr Luboradzki] and optical lab [headed by Prof. Wojtkowski] were organized. Scientists talked about their work, problems and performed some laboratory demonstrations. Participants can also see unique research equipment and learn more about the results that can be obtained by using it. The idea of this type of open days was born during conversations with participants of popular scientific lessons organized at the Institute. They often asked what we do, what kind of research we run, and how research results translate into everyday life. We decided that the best way to explain this would be laboratory visits and a conversation with scientists. The goal is to make these visits informal, so that participants can freely ask questions and if possible observe the research equipment in action.

- **Open day in the X-ray laboratory**

  Visits in the X-ray laboratory included demonstration of the X-ray diffractometer and preparation of the monocrystalline sample. Participants could prepare their own sucrose crystal samples and check what diffraction pattern they will get. Dr Luboradzki, the head of the lab, explained first of all the importance of knowledge of the crystal structure in modern chemistry and physics. He mentioned the correlation of the structure of the molecule with its reactivity and chemical properties. He also talked about the difficulties associated with the measurement of very complex molecules such as proteins or DNA and the fascinating history of crystallography. The discussion also focused on more general topics such as symmetry and its impact on everyday life. The visit took place on April 23th, 2017 and gathered about 25 people.

- **Open day in Physical Optics and Biophotonics group**

  On May 21th, 2018 prof. Wojtkowski and his POB team hosted about 25 visitors in his laboratory. They had the opportunity to see the unique, non-commercial equipment used during the research and listen prof. Wojtkowski talked about optical imaging of living tissues – the main research task. He discussed the latest problems of optical imaging and the achievement of this field, however in a form affordable to non-advanced listeners.

Additionally, visitors had the opportunity to observe simple experiments showing such optical phenomena as diffraction, interference or deflection of light. They could also build and test their own simple optical system using an optical table, lasers and professional equipment.

2.2 Scientific CHAIRS

In an open competition for the production of short film promoting the group of the ERA Chair holder the company was selected. The duration of the main movie will be about 6 minutes plus two 1-minute trailers. The movie will be widespread on social media, and IPC & CREATE project webpages as well as conferences.

The main theme of the film is light, its various forms and structures. Members of the research team as narrators will talk about their fascination with light, research and discoveries. Such a form in an unobtrusive way will allow to present the team as people full of passion, involved in their work, forming a team. Although each of them deals with something else, they share one goal- to search for new imaging techniques.

The main target audience is: scientific and business communities.

Examples of the photos taken from the plan are presented below:

2.3 Popular science lectures

The cycle of popular science lectures proofed to be so popular that eventually we decided to organize it all year round. The lecture *„Gases, liquids, solids"* with experiments and hands-on activities (lecturer - dr Roman Luboradzki): was dedicated to Secondary Schools and High Schools students. During 28 lessons [which took place 01.2017-09.2018] we hosted about 1120 students. Additionally the new lesson entitled *"How physicist and chemist look at life - what for a biologist needs physicochemistry?"* was created. The lesson was shown for the first time as part of the 21. Science Festival and now is a part of IPC regular educational activities. The scenario was created in co-operation with prof. Wojtkowski group and contains some of their research results.

2.4 Press notes and information releases

Press notes are an effective way to disseminate project's results and arousing interest of various target groups. So far, the following press articles have been prepared and published at the CREATE project, IPC, Alpha Galileo and/or EurekAlert! websites as well as the Facebook:

- *The European ERA Chair grant awaits a top academic,*
- *The best will establish a new Chair: The launch of the prestigious ERA Chair grant competition,*
- *Winner of the "Polish Nobel Prize" to create a new department at the IPC PAS,*
- *Inspiration needs new tools,*
- *IPC PAS starts cooperation with a leading university in China,*
- *State Key Laboratory of Medicinal Chemical Biology signed an Agreement with Institute of Physical Chemistry - Polish Academy of Sciences (Nankai University in China website),*
- *The Polish physicist is revolutionizing global diagnostics (*Rzeczpospolita *newspaper, in addition "Development of research in medicine and biotechnology", p. 4) – interview with the ERA Chair holder and prof. Marcin Opallo, IPC Director,*
- *Small droplets are a surprise: they disappear more slowly than they should,*
- *With more light, chemistry speeds up,*
- *A new device under development for a more effective fight against antibiotic-resistant bacteria"* (additionally at BacterOMIC Ltd. website),
- *The new method of analysis in record high speed DNA assay device,*
- *A super resolution view of chemical reactions,*
- *Photoreactors the size of a hair".*

The purpose of publishing the abovementioned articles was to:

- spread information on opening call for the position of the ERA Chair holder,
- promote the CREATE project,
- promote a candidate (namely: Professor Maciej Wojtkowski) selected for the position of the ERA Chair holder,
- spread information on the start of cooperation between IPC and State Key Laboratory of Medicinal Chemical Biology Nankai University in China. The cooperation is aimed at supporting interdisciplinary and international research at IPC,
- promote the new specialization

2.5 Other

- **Cooperation with Children University Foundation** – the oldest and the largest children's university in Poland. Two of our PhD students, Kinga Matuła and Artur Ruszczak provided series of meetings/workshops about microbiological laboratory, bacteria, viruses, nanoparticles and microfluidics. Students at age around 11 performed several experiments and as a final result they design new materials based on nanoparticles that possess unique antibacterial activity. In particular the following classes were organized:

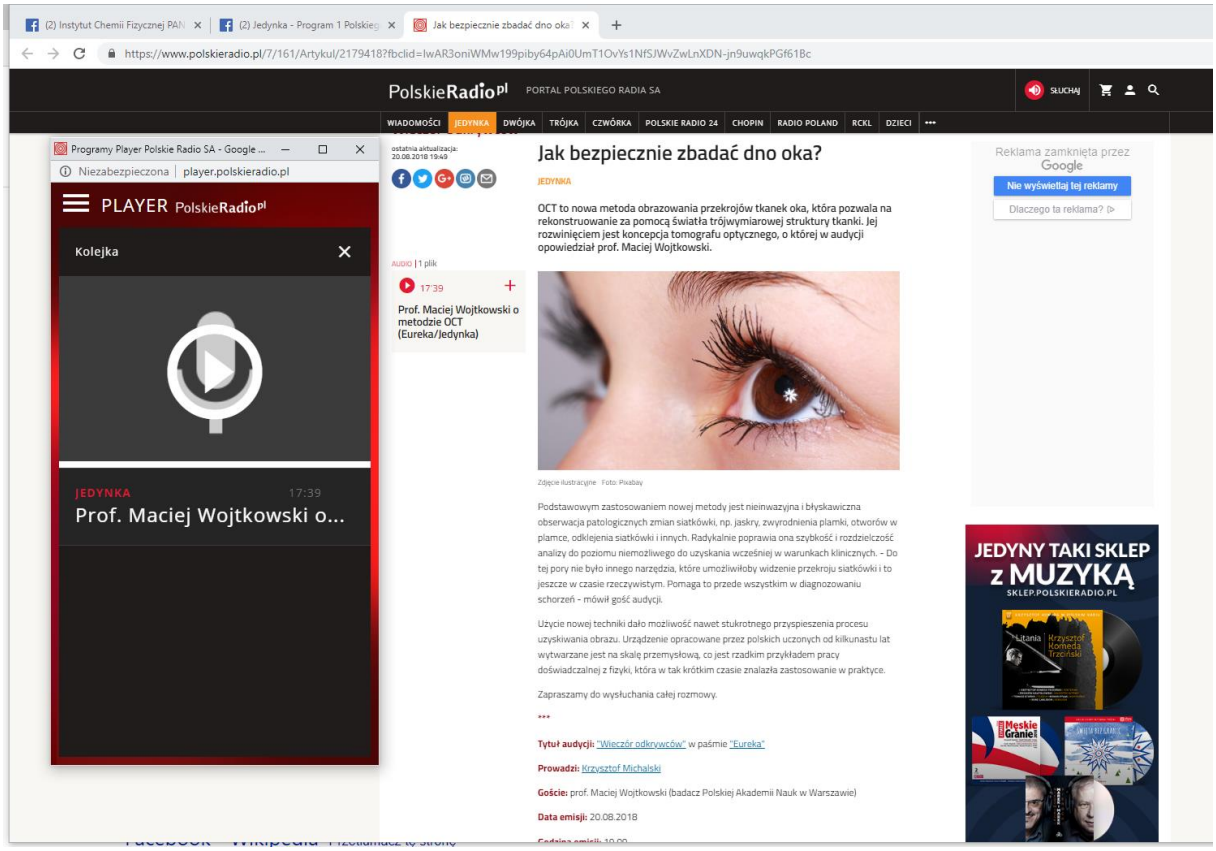
"The nanoworld. At the junction of nanotechnology and the world of the living cells" (lecturer: Kinga Matuła). Classes were dedicated to school children (23 participants). The following topics were addressed: microworld, what does the microbiology do and how to work in the lab/ the world of bacteria / bacteriophage / nanoworld (i.e. nanotechnology and nanoparticles). Classes took place between Nov., 2016 – Jan., 2017.

"Medicine of the XXI century" (lecturer: Artur Ruszczak). Classes were dedicated to school children (25 participants). The following topics were addressed: how to replace the great machines small chip?/ how to close the drug in capsule? / how to sell your idea to investors? / what is the paper test? / what is a microfluidic device? Classes took place between the 8th Oct. – the 3rd Dec., 2016.

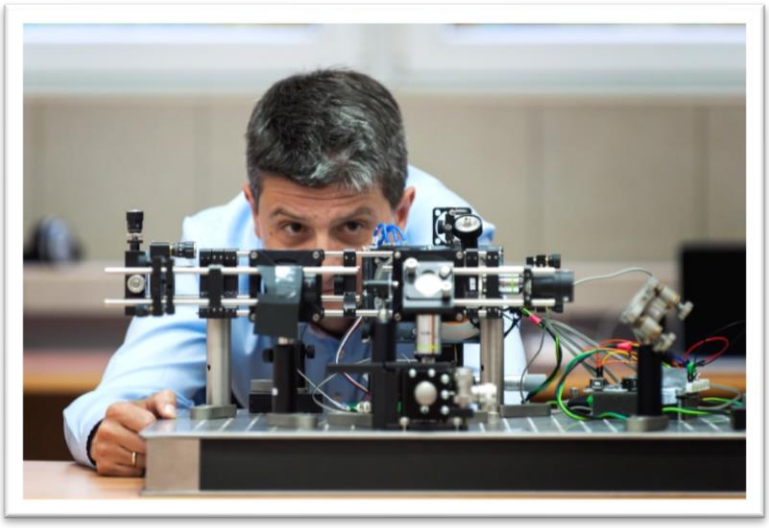
To continue the abovementioned popular science lectures series, IPC applied successfully for a **grant under granting scheme "University of young researcher"** (Ministry of Science and Higher Education).

The main goal of this program is popularization of science and research with its application among children and youth aged 6-16. Project will start in March and seven brilliant scientists from the IPC PAS will be involved in realization of workshops and lectures. Their aim will be to combine chemistry, biology, physics and nanotechnology to show the beauty of science and challenges at the interface of different fields to encourage young students to expand knowledge. The series of meetings predict various topics related to: 1) properties of liquids, gases, solids and phase changes; 2) genetic engineering; 3) world of bacteria and viruses; 4) bacteria vs. antibiotics; 5) bacteriophages; 6) nanotechnology; 7) electrochemistry – batteries in action; 8) GMO organisms; 9) illusion based on scientific tricks.

- **1 presentation delivered by the Project Manager, Agnieszka Tadrzak, promoting the CREATE project (meeting organized by Regional Contact Point):**
  The presentation entitled "*CREATE project at IPC - experience of the preparation and implementation of an ERA Chairs grant*" was delivered as a part of an event: "*The ERA Chairs project as a chance of development of a research unit*" took place in Cracow on the 24th Oct., 2016. Ca. 60 persons participated in the event. The meeting was a good occasion to advice other research units how to apply for the ERA Chairs grant and share experiences related to the project.
- **Interview with profesor Maciej Wojtkowski – 1st Program of the Polish Radio (20 Sept., 2018)**



➢ **a series of photos of the emerging lab, and the new team:**



Photos were uploaded on the project & IPC webpages, some of them complemented press notes.