



The CREAtion of the Department of Physical Chemistry of Biological SysTEms [CREATE]

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

**Report on the CREATE 1st scientific symposium
with the visit of Benjamin Judkewitz**

Level of dissemination: PUBLIC

Warsaw, May 2018



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



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CREATE 1st SCIENTIFIC SYMPOSIUM

On 18 May 2018, the 1st CREATE Scientific Symposium was organized in cooperation with the Warsaw University of Technology. Titled “***Physical Chemistry in biological systems – breaking barriers***”, this event was a part of the 10th Anniversary Symposium of the Photonics Society of Poland, combined with the International Day of Light 2018.

Programme of the CREATE symposium included an invited talk from the prominent international speaker, several short talks from POB Group Members, representatives of synergetic groups and collaborators from different institutions. The purpose of the event was to engage scientists from diverse research areas to share their expertise and insights on the projects they execute, what will serve as a knowledge exchange platform, setting up new relations between young scientists in interdisciplinary research. Full programme of the CREATE 1st Scientific Symposium is presented in the attached poster [see [Annex 2](#) for event poster].

First part of the CREATE symposium started with a seminar of Prof. Benjamin Judkewitz, who delivered a talk on “*Deep imaging with time-reversed light*”. Seminar was held in the assembly hall of the Warsaw University of Technology, Physics Building and it was attended by IPC PAS researchers and PhD students, who were invited to join this CREATE event, as well as outside guests – overall, all seminars were attended by more than 100 people.



The seminar of Prof. Benjamin Judkewitz, Warsaw University of Technology, Physics Building, 18 May 2018

Prof. Judkewitz seminar was focused on describing several strategies to address one of the main optics challenges - imaging through scattering tissues, using techniques based on wavefront engineering, in order to enable optical imaging at unprecedented depths in biological tissues. Furthermore, he introduced the principle of F-SHARP microscopy, as a promising solution to this challenge.

Following part was dedicated to the talks of the POB Group members, synergetic teams (Soft Condensed Matter, Microfluidics and Complex Fluids) and collaborators from Warsaw University of Technology, Nencki Institute of Experimental Biology PAS, University of Dundee and Wrocław University of Science and Technology. Titles of the talks are presented in attached poster [see [Annex 2](#)].

Below you can find photo report from the talks given by the guests, who were invited to participate in the symposium by the ERA Chair holder:



Invited talks within CREATE 1st Scientific Symposium, Warsaw University of Technology, Physics Building, 18 May 2018



The CREATE 1st Scientific Symposium allowed to strengthen collaboration with several different research groups on the interdisciplinary level, linking physical chemistry with biology and medicine. This event served as well as a great networking platform, especially during the integration part organized for all conference attendees.



VISIT OF PROFESSOR BENJAMIN JUDKEWITZ

Visit of Professor Benjamin Judkewitz was organized within the frames of CREATE 1st Scientific Symposium *Physical Chemistry in biological systems – breaking barriers*.

Besides the main goal of this visit – delivering a scientific seminar during the CREATE symposium, Prof. Judkewitz participated in several meetings, with synergetic teams to support mentoring activity of the ERA Chair holder and with CREATE project representatives, for suggestions on possible development directions and improvements at IPC PAS.

Professor Benjamin Judkewitz is the head of the Bioimaging and Neurophotonics Lab at Einstein Center for Neurosciences, which is a part of the NeuroCure Cluster of the German Excellence Initiative, located at the campus of the University of Berlin (Charité–Universitätsmedizin Berlin). In his career, Prof. Judkewitz focuses on the research in the field of Bioimaging and Neurophotonics, Tool development and Neuroethology. With his team, Professor Judkewitz has developed new optical microscopy techniques that overcome optical scattering, in order to enable imaging and optical stimulation at unprecedented depths in biological tissue. Many labs throughout the world now use this method, which has been published in Nature Methods as well as Nature Protocols.



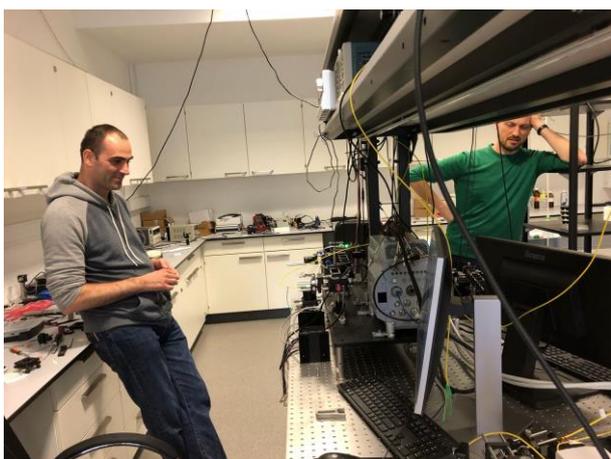
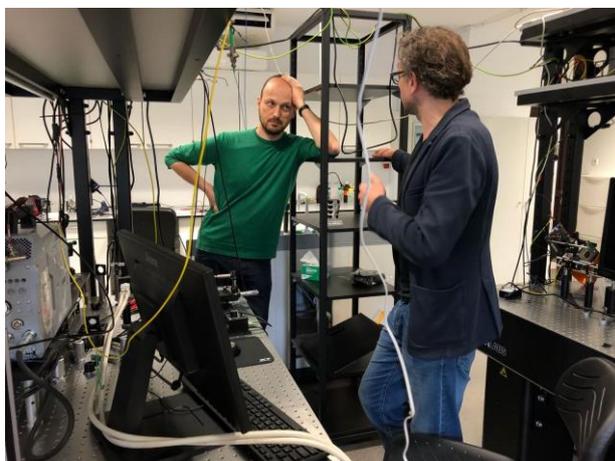
Among the activities and awards received by Benjamin Judkewitz are:

- 2015 Technology Prize by the German Society of Neuroscience
- 2010 - 2014 Sir Henry Wellcome Postdoctoral Fellowship by the Wellcome Trust
- 2008 UCL Young Investigator Award in Neuroimaging Techniques
- 2006 - 2010 Boehringer Ingelheim Fonds PhD scholarship
- 2006 - 2010 UK Medical Research Council PhD scholarship
- 2000 - 2005 German National Academic Foundation (Studienstiftung) scholarship
- 2003 - 2004 University of California exchange student scholarship
- 2003 - 2004 German Academic Exchange Service (DAAD) scholarship
- 1993 1st prize in the German Federal Competition Mathematics.

COURSE OF THE VISIT

The visit took place between 17-18 May 2018 [see [Annex 1](#) for agenda], with lab tours planned on the first day of the visit, and a meeting with ERA Chair project coordinator and ERA Chair holder on the second day of the visit. The main event - CREATE 1st scientific symposium with the invited talk of prof. Judkewitz, took part on May 18th.

Starting his visit at IPC PAS, Prof. Judkewitz met with representatives of two synergetic teams, chosen by ERA Chair holder: Soft Condensed Matter Group represented by dr. Krzysztof Sozański and Microfluidics and Complex Fluids Group with dr. Marco Costantini. The aim of these laboratory visits was to familiarize Mr. Judkewitz with IPC PAS, establish contacts with synergic groups supporting the ERA Chair holder team and discuss the possibility for future cooperation.



In the second part of the day, Prof. Judkewitz had face to face meetings with POB Group members, to discuss research projects they are involved in and better understand the main research activity of the ERA Chair holder.



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ANNEX 1.

Full agenda of the visit



The CREATION of the Department of Physical Chemistry of Biological Systems [CREATE]

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CREATE lectures / CREATE 1st Scientific Symposium

The Institute of Physical Chemistry of the Polish Academy of Sciences

Agenda

May 17, 2018

1:00 – 2:00 pm	Lunch
2:00 – 4:30 pm	Lab tours
2:00 - 2:30	<i>Soft Condensed Matter Group, Department of Soft Condensed Matter</i> Krzysztof Sozański
2:30 - 3:00	<i>Microfluidics and Complex Fluids, Department of Soft Condensed Matter</i> Marco Costantini
3:00 – 4:30	<i>Physical Optics and Biophotonics Group (POB), Department of Physical Chemistry of Biological Systems</i>
3:00 – 3:15	Dawid Borycki
3:15 – 3:30	Patrycjusz Stremplewski
3:30 – 3:45	Paweł Wnuk
3:45 – 4:00	Egidijus Aukorius
4:00 – 4:15	Mounika Rapolu
4:15 – 4:30	Michał Hamkało



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May 18, 2018

9:00 – 10:00 am Meeting with ERA Chair Project Coordinator and ERA Chair holder
Short discussion – summary of the lab tours and recommendations for IPC PAS

CREATE 1ST SCIENTIFIC SYMPOSIUM

12:50 – 1:10 pm Seminar – Prof. Benjamin Judkewitz
Deep imaging with time-reversed light

2:00 – 5:00 pm “Physical Chemistry in biological systems – breaking barriers” session,
chaired by Prof. Maciej Wojtkowski:

2:00 Marco Costantini - *Microuidic platforms for the synthesis of highly ordered biomaterials for Tissue Engineering*

2:20 Jakub Bogusławski - *Low-dimensional materials as versatile modulators for fiber lasers*

2:40 Maciej Trusiak - *Full field optical interference metrology aided by adaptive data analysis for biological specimen evaluation*

3:00 Hubert Doleżyczek - *Optical coherence microscopy (OCM) for in vivo rodent brain imaging in physiological and ischemia conditions*

3:40 Kinga Matuła - *Mechano-evolution of Escherichia coli upon exposure to ZnO nanorods*

4:00 Arkadiusz Kuś - *Holographic Microscopy*

4:20 Michał Dąbrowski - *Imaging and analyzing single photons in quantum optics experiments*

4:40 Piotr Zdańkowski - *An adaptive optics 3D STED microscope for super-resolution imaging of thick samples*



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ANNEX 2.

CREATE 1st Scientific Symposium – event poster



International
Day of Light



Friday,
18 May 2018

CREATE 1st scientific symposium

Physical Chemistry in biological systems – breaking barriers

Join the **CREATE 1st scientific symposium** colocated with the **10th Anniversary Symposium of the Photonics Society of Poland** combined with the **International Day of Light 2018**

12:50	Prof. Benjamin Judkewitz	<i>Deep imaging with time-reversed light</i>	<i>Charité Berlin, Germany</i>
2:00	Marco Costantini	<i>Microfluidic platforms for the synthesis of highly ordered biomaterials for Tissue Engineering</i>	<i>Institute of Physical Chemistry, PAS</i>
2:20	Jakub Bogusławski	<i>Low-dimensional materials as versatile modulators for fiber lasers</i>	<i>Wrocław University of Science and Technology</i>
2:40	Maciej Trusiak	<i>Full field optical interference metrology aided by adaptive data analysis for biological specimen evaluation</i>	<i>Warsaw University of Technology</i>
3:00	Hubert Doleżyczek	<i>Optical coherence microscopy (OCM) for in vivo rodent brain imaging in physiological and ischemia conditions.</i>	<i>Nencki Institute of Experimental Biology, PAS</i>
3:20-3:40 Coffee break			
3:40	Kinga Matuła	<i>Mechano-evolution of Escherichia coli upon exposure to ZnO nanorods</i>	<i>Institute of Physical Chemistry, PAS</i>
4:00	Arkadiusz Kuś	<i>Holographic Microscopy</i>	<i>Warsaw University of Technology</i>
4:20	Michał Dąbrowski	<i>Imaging and analyzing single photons in quantum optics experiments</i>	<i>University of Warsaw Faculty of Physics</i>
4:40	Piotr Zdańkowski	<i>An adaptive optics 3D STED microscope for super-resolution imaging of thick samples</i>	<i>The University of Dundee</i>

Registration by email: apawlus@ichf.edu.pl (subject: CREATE symposium, text: name, surname)
registration deadline: 10 May 2018 | conference fee - free of charge

For more details visit: <http://photonics.pl/>



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