



HR EXCELLENCE IN RESEARCH



*The **CRE**ation of the Department of Physical Chemistry of Biological Sys**TE**ms [CREATE]*

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

Report on the visit of prof. Prof. Frank Glorius
[WP3]

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Warsaw, February 2020



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INTRODUCTION

The visit of Prof. Dr. Frank Glorius at the Institute of Physical Chemistry of the Polish Academy of Sciences (IPC) was held under a series of cyclical lectures on interdisciplinary emerging research. Prof. Glorius was invited to IPC to deliver seminar lecture on his studies.



Frank Glorius is a full professor for Organic Chemistry at the Westfälische Wilhelms-Universität in Münster. He completed his Doctorate in 2000 at the University of Basel. Between 2000–2001 Frank Glorius was a postdoctoral research associate at the Harvard University in Cambridge. Following this, he worked with his mentor Alois Fürstner as an independent researcher/research group leader/Assistant Professor at the Max-Planck-Institut für Kohlenforschung. 2004, before formal completion of his habilitation, he was awarded a position of C3-Professor of Chemistry at the University of Marburg. Since August 2007, Frank Glorius has been a Professor of Organic Chemistry at Westfälische Wilhelms-Universität in Münster.

Professor Glorius' research focuses on the development of new catalytic methodologies

in organic chemistry. His research group explores a wide range of topics including the development and application of N-heterocyclic carbenes (NHCs) in catalysis, C-H activation, asymmetric organocatalysis, chemo- and enantioselective hydrogenation of aromatic compounds, photoredox catalysis, heterogeneous catalysis, Metal Organic Frameworks/MOFs, and the development of reaction screening technologies.

Professor Glorius has received numerous grants, prizes and awards. Among others, he has received are the Gottfried Wilhelm Leibnitz Prize awarded by the German Research Foundation (2013) and the Arthur C. Cope Scholar Award from the American Chemical Society (2018). 2010, he received the ERC Independent Researcher Starting Grant and 2018 prof. Glorius received an ERC Advanced Grant.

THE COURSE OF THE VISIT

The visit of prof. Frank Glorius took place on the 13th – 14th, February, 2020 [see [annex 1 for the agenda](#)].

On the 13th of February prof. Glorius delivered seminar entitled *“On discovery in catalysis”*. The seminar was held in the assembly hall of IPC. All researchers and PhD students employed at IPC were invited to participate in this seminar.

Abstract of the seminar

Catalysis is a key technology of our modern societies, since it allows for increased levels of selectivity and efficacy of chemical transformations. While significant progress can be made by rational design or engineered step-by-step improvements, many pressing challenges in the field require the discovery of new and formerly unexpected results (**Figure 1**). Arguably, the question “How to discover?” is at the heart of the scientific process. In this talk, strategies and discoveries from the Glorius group will be discussed. Topics will include the use of N-heterocyclic carbenes (NHCs)^[1] in different fields of catalysis (such as arene hydrogenation^[2] and on-surface chemistry^[3]) and also discovery and reproducibility in photocatalysis.^[4-6]



Figure 1: “Landing of Columbus at the Island of Guanahani, West Indies, 12 October 1492”, John Vanderlyn, 1836-47

References:

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The seminar of prof. Frank Glorius, assembly hall, the 13th February, 2020.

The active and supportive discussions after his scientific talk took place. He gave valuable tips on how to manage a large research team and prepare a successful European grant.

After the seminar and also during the first day of his visit, prof. Frank Glorius visited selected laboratories. The aim of these visits was to familiarize with IPC, establish contacts with synergic groups supporting the ERA Chair holder and discuss possibility of the future cooperation. The purpose of these visits was also to assess the research conducted in individual groups and to identify possible problems.

Meetings with the following research groups were organized:

- **prof. dr hab. Maciej Wojtkowski** – the ERA Chair holder, head of Physical Optics and Biophotonics Group
- **dr hab. Anna Śrębowata** - Modern Heterogenous Catalysis Group
- **dr hab. Volodymyr Sashuk** (head) – Group of Chemistry in Confined Spaces
- **dr hab. Juan Carlos Colmenares** (head) – Group of Catalysis for sustainable energy production and environmental protection (CatSEE)
- **dr hab. Marcin Pisarek** – XPS laboratory
- **dr hab. Adam Kubas** (head) – Cooperative Catalysis Group

Professor Frank Glorius recognized the research conducted at IPC as very interesting. He learnt about the different research projects carried out at IPC. He assumed as very impressive the facilities for the on-surface analysis (XPS, STM), the laser facilities and the investigation on how the viewing process in the eye works. He was liked IPC first machine learning projects, as well as the building of functional supramolecular architectures and heterogeneous catalysts.

Prof. Glorius stated that now he feels connected with the colleagues of IPC and that he has extended his network. The meetings with Prof. Glorius were planned with the intention to start cooperation between his group and IPC groups. Professor Glorius was impressed by the IPC high-quality work and openness of IPC researchers to joint research. As a result of this visit, the exchange of academic staff between Professor Glorius's group and IPC researchers as well as a joint scientific project related to the application of flow reaction conditions in organic synthesis is planned.



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ANNEX 1.

Agenda of the visit of prof. Frank Glorius



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CREATE lecture

The Institute of Physical Chemistry of the Polish Academy of Sciences

Thursday, February 13th, 2020

- 11.30 pick up from the airport – dr hab. Anna Śrębowata
- 12.15 **lab visits** (part I)
dr hab. Anna Śrębowata - Modern Heterogenous Catalysis Group
- 13.00 **Prof. Dr. Frank Glorius– seminar lecture**
„On discovery in catalysis”
- 15.00-17.00 **lab visits** (part II)
- 15.00 **dr hab. Volodymyr Sashuk** – Head Group of Chemistry in Confined Spaces
- 16.30 **prof. dr hab. Maciej Wojtkowski** – ERA Chiar holder,
Head of Physical Optics and Biophotonics Group
- 17.30 dinner

Friday, February 14th, 2020

- 10.00-13.00 **lab visits** (part II)
- 10.15 **dr hab. Juan Carlos Colmenares** – Head Group of Catalysis for sustainable energy production and environmental protection (CatSEE)
- 10.45 **dr hab. Marcin Pisarek** – XPS laboratory
- 11.15 **dr hab. Adam Kubas** – head of Cooperative Catalysis Group
- 11.45 **summary discussions** – dr hab. Anna Śrębowata
- 13.00 Lunch
- 15.00 Departure



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