

MBExC Press Release _ 01 October 2021

The MBExC welcomes Jun.-Prof. Dr. Nadja Simeth

Chemist Nadja Simeth just started building-up her own junior research group for Molecular Labeling Chemistry at the University of Göttingen. The expert in the field of organic chemistry and photochemistry supports the research of the MBExC Cluster of Excellence.

(mbexc) The chemist Dr. Nadja Simeth has been awarded a junior professorship in Molecular Labeling Chemistry at the University of Göttingen. The establishment of her own independent junior research group is funded by the Göttingen Cluster of Excellence "Multiscale Bioimaging: From Molecular Machines to Networks of Excitable Cells" (MBExC). The group is hosted at the Institute of Organic and Biomolecular Chemistry of MBExC deputy speaker Prof. Dr. Claudia Steinem until completion of the cluster's own building at the Faculty of Chemistry. "Nadja Simeth is a great asset to MBExC and the Faculty of Chemistry, both in terms of research and teaching," says Prof. Steinem, who is also acting dean of the Faculty of Chemistry.



Chemist Dr. Nadja Simeth takes up junior professorship for Molecular Labeling Chemistry at the MBExC. Photo: private.

Simeths research dwells at the interface of physical and organic chemistry, and strives to incorporate biomolecules in chemical, biohybrid, and biomimetic systems. In biological and artificial networks, the controlled transduction of information builds the basis for complex function. This process is regulated by the signal-induced up- and downregulation of selected signaling pathways through specific external stimuli. These and their effect on network function are in focus of numerous studies. While light is an established, traceless and precise external trigger for a wide range of applications, most systems are limited to the use of a single photoresponsive molecule and its regulatory effect. However, rigorous modulation in a complex biological network is based on the interplay of a series of external stimuli. Here, Simeths research comes in: Her goal is to develop external stimuli that can be used to control different individual processes within the same system and in the presence of each other. The focus lies on the orthogonality and cooperativity of (photo)chemical events to label molecules and build tools to understand complex function and bio(hybrid) networks.

"In the long-term perspective, artificial systems and networks will behave similarly to their biological models. They can therefore be rationally combined and will find widespread application as dynamically regulated and communicating networks. Examples include the construction of wearable electronic sensors, biocompatible devices, adaptable (bio)materials and prosthetics. In addition, they will be used to study biological processes and develop treatments for dysfunction by isolating and rebuilding the biological network artificially," explains Simeth her research focus. The

MBExCs interdisciplinary and stimulating research environment provides access to specific research infrastructure as well as diverse collaborations.

About the person

Nadja Simeth studied chemistry at the University of Regensburg. After completing her master's degree in organic chemistry, physical chemistry and biochemistry, she also earned her doctorate there. Since October 2018, she has been a Feodor Lynen Fellow of the Humboldt Foundation at the University of Groningen in the laboratory of Prof. Dr. Ben L. Feringa, Nobel Laureate in Chemistry 2016. There, she conducted research on light-mediated dynamic regulation of the structure, sequence and function of desoxyribonucleic acid (DNA).

More information

about Nadja Simeth: <https://mbexc.de/research/new-mbexc-groups/>

about the MBExC: <https://mbexc.de>

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