Meet Prof. Nadja A. Simeth, Thieme Chemistry Journals Awardee 2024!

Prof. Nadja A. Simeth *is Assistant Professor at the University of Göttingen (Germany). She obtained her PhD at the University of Regensburg (Germany) in 2018 prior to starting her independent career.*

Thieme: Which field of organic chemistry are you interested in the most and why?

Prof. Simeth: I am interested in organic photochemistry as I am deeply intrigued by making new molecules and molecular architectures and by studying excited state pathways and transformations because it allows for reactivity that is forbidden or not easily accessible via the ground state.

Thieme: Following that, what is the focus of your current research activity?

Prof. Simeth: My group's research focus is to study different photoresponsive molecules to develop from them probes and tools for biological research questions. To achieve this, we are working both with small molecules and bioorganic chemistry to obtain, for example, light-responsive peptides and peptide-hybrid constructs. We do this via bottom-up synthesis and through labelling chemistry. We are specifically interested in exploiting the potential of photochemistry to address different distinct processes in the same environment by adjusting the energy of the photons employed. For instance, we are trying to combine different chromoselective transformations to act synergistically or in opposite directions to tweak the overall response of the system.

Thieme: What do you think about the modern role and prospects of organic chemistry?

Prof. Simeth: Organic chemistry is and always will be a key technology in all aspects of life and society in my option. The field itself has the ability to transform according to its needs. With increasing requirements, for instance, in sustainable and recyclable plastics, organic chemistry has found new ways to make materials meeting these requirements. Also, every new chemical transformation that is discovered and developed unlocks new possibilities to make "better" molecules or simply gives us access to molecules that were previously not available and could allow us to, for example, make a new drug.

Thieme: Which difficulties are there for young upcoming chemists in your field? Do you have any tips?

Prof. Simeth: My research field is – like many fields nowadays – at the interface between several classical disciplines and thus, incoming students often feel a bit overwhelmed with the diversity of techniques we use to study our molecules and systems. Usually, I tell the students that I don't think there is a single person – strongly including myself – that was educated in their studies in all the aspects of research happening in our lab. And the same can be extrapolated for young upcoming chemists in the field, who are just starting their careers. While this can be a challenge, it is equally an opportunity as it allows chemists with different backgrounds to come jointly together in the same field and to look at the same problem from different angles, eventually learning more than the single person.

Thieme: What is your most important scientific achievement to date and why?

Prof. Simeth: I can probably answer this question better a few years from now, as it's early days and my group is currently in the exploring phase, testing some of the hypotheses we set out to explore. For my personal growth as a scientist, the most important achievement was probably to understand and rationalize the photoswitching behavior of phenylazoindoles, which was a part of my PhD work. This is because the molecule we made was intended for a particular purpose, but it just did not behave the way we originally envisioned. I had the freedom and support to dig deeper, set up an international collaboration, and in a team effort we were able to untangle the underlying mechanistic aspects, giving insight into the solvent- and substituent-specific behavior of the molecules. To date, I am still happy if a project just works out as we designed it, but if we make a molecule that behaves differently from what we expect, I get intrigued to discover what is going on and maybe we find something completely new and unexpected, maybe not, but that is the beauty of working in science.

Thieme: Could you tell us something about yourself outside the lab, such as your hobbies or extra-work interests?

Prof. Simeth: I always liked to do sports and played handball until a few years ago. Now, I mainly go running and more recently, encouraged by a friend and colleague, started bouldering which I enjoy very much. Besides these, I like to cook for myself and for and with others and have my go-to dishes after a long day.