Meet Dr. Cristian Pezzato, Thieme Chemistry Journals Awardee 2025!

Dr. Cristian Pezzato *was born in Rovereto, a small town in Northern Italy. He obtained his PhD in chemistry in 2015 at the University of Padova (Italy) and then spent three years (2015–2018) at Northwestern University (USA). From 2019 to 2022, he was a junior group leader at the Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland, where he started his independent career thanks to a Swiss National Science Foundation "Ambizione" Grant. In 2022, he joined the Laboratory for Macromolecular and Organic Chemistry (MOC) as Tenure-Track Assistant Professor sponsored by the Italian Rita Levi Montalcini Program for young researchers.*

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

Dr. Pezzato: I am primarily interested in the synthesis and characterization of molecular photoswitches, particularly spiropyran-merocyanine compounds. When their thermodynamically most stable state is the open protonated form (MCH), these compounds readily undergo ring closure following visible light absorption, ultimately releasing a proton. This photoinduced proton dissociation is metastable, and results in pH gradients that can be harnessed in a variety of applications. I firmly believe the strategic use of artificial-light-driven proton gradients may revolutionize future photoenergy conversion systems.

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

Dr. Pezzato: Currently, we are exploring several strategies to enhance solubility, hydrolytic stability, and photoacidic characteristics. These three key factors limit the extent and repeatability of pH jumps that a given MCH can induce in water. Our approaches range from physical organic chemistry to supramolecular and polymer chemistry, aiming to elucidate the effects of substituents, hosts, and confinement on the (photo)chemical properties.

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

Dr. Pezzato: To me, organic chemistry is a means, not an end. The most interesting aspect for me is not the synthesis itself or the way one arrives at a specific compound. Rather, it's understanding how the final molecules behave in specific contexts, whether and how they could be modified to be applied. I consider the tools of organic chemistry to be the beating heart of materials science, without which we wouldn't be able to discover new functions or design and fabricate next-generation advanced organic materials.

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

Dr. Pezzato: There are many difficulties. Within career progression, one faces less and less laboratory activity in favor of more computer-based work. This is inevitable, and one must consider that their job will dramatically change over the years. It was not easy for me, as I really like to design and carry out experiments on my own. Among other suggestions I would say it is important to be willing to tackle different problems. For instance, when searching for a postdoc position, don't be afraid to challenge yourself in a field different from your own. This will help you a lot in developing fresh cross-disciplinary research projects to attract funding.

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

Dr. Pezzato: Undoubtedly, it's the *Chemical Science* paper we published in 2020. This work merged compound synthesis and purification with a comprehensive set of (photo)chemical characterizations, including NMR, UV-Vis, and potentiometric analyses. The research was carried out in collaboration with two brilliant physicists, Daniel M. Busiello and Stefano Zamuner. I recall a colleague and close friend mentioning in 2019 that his PhD student had been working specifically on understanding these fascinating molecules in water but had to abandon the project due to numerous practical challenges. We, however, persevered. As a result, our paper quickly became a key reference for characterizing the photoacidity of spiropyran-merocyanine photoswitches in water.

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

Dr. Pezzato: Since I was born pretty close to the beautiful Dolomite Mountains, I like hiking there and in the woods. I also enjoy this activity because I like eating and drinking good food and beverages, which I can indulge in more after hiking. In the past, I practiced a lot of fly fishing, an activity I would like to resume more frequently. I am a big F.C. Internazionale fan, which I consider the one and only football team in Milan.