

**Meet Dr. Ina Vollmer,
Thieme Chemistry Journals Awardee 2025!**



Dr. Ina Vollmer is an assistant professor at Utrecht University (The Netherlands) since 2021. She studied chemical engineering at the Massachusetts Institute of Technology (USA; graduation 2015) and completed a doctorate at Delft University of Technology (The Netherlands; graduation 2019).

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

Dr. Vollmer: Polymer chemistry is most interesting as I am working on methods for depolymerization.

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

Dr. Vollmer: My focus is on mechano-catalytic depolymerization of polyolefins in the ball mill. The most produced polymers, polyethylene and polypropylene, are difficult to depolymerize. The backbone of these polymers is made up exclusively of carbon-carbon bonds. Their cleavage requires high energy and transient radical intermediates are formed upon homolytic cleavage of the carbon-carbon bonds. Therefore, it is difficult to steer the reaction of these radicals towards monomers due to the high-energy environment needed for their cleavage. We address this issue by separating the cleavage from further reactions and by stabilizing the radical intermediates. The polymers are cleaved at the high-energy zone at the impact point of the grinding spheres used for ball milling. However, this high-energy zone only exists for nanoseconds. Therefore, follow-up reactions occur in a much lower energy environment, which allows control over radical reactions. In addition, by chemically functionalizing the surface of the grinding spheres, we enable the stabilization of radicals on the grinding sphere surface.

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

Dr. Vollmer: In my experience, it is very beneficial to not be afraid to enter a new field, to bridge fields, and to learn new things.

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

Dr. Vollmer: The introduction of the surface-activated grinding spheres to promote the depolymerization of polyolefins during ball milling is the achievement that I am most proud of. When I initially had the idea, I was far from sure that it would work, but now we are in the process of scaling up the process and founding a startup. However, the following years will show whether a process based on this catalyst will be feasible.

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

Dr. Vollmer: I am very concerned about the climate and am active in networks to address this issue. In addition, I love dancing and reading.
