Monatshefte für Chemie - Chemical Monthly (2026) 157:1425–1426
https://doi.org/10.1007/s00706-026-03531-9

EDITORIAL

Chemistry in transition: contributions from the Austrian chemistry days

Peter Gärtner[1]

Published online: 10 October 2026
© Springer-Verlag GmbH Austria, part of Springer Nature 2026

The first special part of this issue of *Monatshefte für Chemie—Chemical Monthly*, brings together selected contributions based on presentations at the Austrian Chemistry Days, held at TU Wien.

These Chemistry Days were dedicated to the topic "Green Chemistry for a Sustainable Europe" and reflected an important ambition of the Austrian Chemical Society: to highlight the contribution of chemistry to a sustainable future and to strengthen the dialogue between different areas of our discipline, as well as between research, industry and society. The program addressed topics ranging from sustainable raw materials and energy storage to carbon capture and the circular economy.

This special part captures some of this spirit and the contributions cover a remarkably broad range of topics—from life-cycle assessment and sustainable recycling to advanced photovoltaic materials, renewable energy technologies, and the history and development of chemical methods. Although diverse, they share a common theme: chemistry has a central role to play in understanding and shaping the transformations required for a more sustainable future.

A particularly appropriate starting point is the contribution by Köck and co-workers on life-cycle assessment of chemicals. The authors review approaches for generating missing data needed to assess the environmental impacts of chemicals, including process simulation, data mining, predictive LCA, machine learning, and computer-aided molecular design. Their discussion of uncertainty, transparency, and reproducibility highlights an essential point: sustainable chemistry requires not only innovative materials and processes, but also reliable methods for evaluating their environmental consequences.

The contribution by Süß and Fischer addresses another central aspect of the circular economy: microplastic formation during the washing stage of polypropylene recycling. It reminds us that sustainability must be examined not only at the level of an overall process but also by carefully considering individual process steps and material flows.

Gugujonović and co-workers turn our attention to renewable energy and advanced materials. Their investigation of a cross-linked fullerene derivative as an interlayer in wide-band-gap perovskite solar cells demonstrates how careful control of interfaces and charge-transfer processes can improve photovoltaic performance, while also illustrating the challenge of balancing efficiency and stability.

The contribution by Geisbauer and Berchthold on Power-to-X and Waste-to-X technologies highlights chemistry's role at the scale of entire energy and industrial systems. Catalysis, hydrogen technologies and the conversion of carbon-containing resources demonstrate how chemistry can connect renewable energy with molecules, materials, and industrial processes—and thereby contribute to the transition towards a sustainable energy system.

The historical dimension of chemistry is represented by Kröppl's contribution on indigo. The transition from natural sources to industrial synthesis was made possible by advances in structural chemistry and synthetic methodology. The history of this familiar blue dye demonstrates particularly well how chemistry connects scientific understanding with technology, industry, and everyday life.

A fitting connection between chemistry's past and present is provided by Soukup, Theiner, and Kerschbaumer, who commemorate 100 years since Fritz Pregl received the Nobel Prize in Chemistry. Pregl fundamentally changed organic analysis by developing microanalytical methods that made reliable analysis possible from only a few milligrams of material. His work is a remarkable example of how methodological innovation can transform chemical research and reflects Austria's important tradition of microchemistry.

✉ Peter Gärtner
peter.gaertner@tuwien.ac.at

[1] Institute of Applied Synthetic Chemistry, Technische Universität Wien, Getreidemarkt 9/163, 1060 Wien, Austria

Taken together, these contributions show both the diversity and the continuity of chemistry. From Pregl's efforts to obtain maximum information from minimal amounts of material to today's development of sustainable processes, advanced materials, and renewable energy technologies, chemistry continues to connect fundamental understanding with practical solutions and societal needs.

This, in my view, is one of the great strengths of our discipline—and one of the reasons why the Austrian Chemistry Days are so valuable. They provide a forum in which different generations, disciplines and perspectives come together, where scientific results can be discussed openly and where new ideas and collaborations can emerge.

We would like to thank all colleagues who contributed to the Austrian Chemistry Days and especially the authors who have developed their presentations into the papers collected here. My sincere thanks also go to the reviewers and co-editors of this special part as well as to the editorial team of *Monatshefte für Chemie—Chemical Monthly*, especially Dr. Christian Hametner, for their careful and valuable work.

Enjoy reading!
Peter Gärtner.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.