



Flow Chemistry Highlights

Flow Chemistry Network

An Interview with Nina Hartrampf

In this edition of the Flow Chemistry Column, we are delighted to feature an interview with Prof. Dr. Nina Hartrampf from the Department of Chemistry at the University of Zurich. Prof. Hartrampf is an expert in the flow chemistry synthesis of peptides, proteins, and related polymers.



Flow Chemistry Network:

What brought you to the field of flow chemistry, and what made you stay and contribute in the area?

Prof. Hartrampf:

During my PhD, I spent some time working with an automated platform for catalyst screening. I enjoyed the automation aspect and was therefore looking for a similar field for my PostDoc, ideally combined with biological applications. This is how I ended up working in flow-based protein synthesis. What made me stay was all the useful additional information we were able to obtain through in-line UV analysis, which we now use to develop new tools for peptide synthesis.

Flow Chemistry Network:

In your mind, what have been the major developments in the field over those years?

Prof. Hartrampf:

In my opinion, significant advancements in automation and in-line data analysis have opened up exciting opportunities for autonomous synthesis optimization. Moreover, innovative reactor designs have expanded the range of reactions that can be efficiently conducted in flow systems.

Flow Chemistry Network:

What are the exciting innovations in the field today which you think could give it even greater impact?

Prof. Hartrampf:

Computational methods for the prediction of reaction products, yields, *etc.* are becoming increasingly important, however, high-quality data sets are still limited in size. (Automated) flow chemistry is ideally suited to provide these analytical data from in-line reaction monitoring, and I do believe that this area will see additional growth in the future.

In addition, we see more and more applications of flow chemistry for peptide synthesis, cyclization, and late-stage functionalization, and there have also been some reports on bioconjugation chemistry in flow – this is an additional research area that will likely continue to expand.

Flow Chemistry Network:

What should a young researcher/industrial chemist keep in mind when embarking on using flow processing?

Prof. Hartrampf:

Flow chemistry is a powerful tool, but it is not going to magically solve all synthesis problems. It is therefore important to understand where it can benefit a project, and when it would be better to work in batch.

Flow Chemistry Network:

Flow chemistry is already being considered as a mature technology. What is left to do to make this a standard tool for chemists and chemical engineers?

Prof. Hartrampf:

I believe that we would have to improve the education in flow chemistry (for chemists). Furthermore, flow chemistry equipment would have to be easier to automate and interface readily with other technology and equipment, thus reducing the entry barrier.

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Would you like to propose a Flow Chemistry Highlight topic here?

Please contact Agnieszka Ladosz or Christophe Allemann, E-mail: agnieszka.ladosz@idorsia.com; christophe.allemann@hefr.ch