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Editorial

The Division of Industrial and Applied Chemistry (DIAC) of the Swiss Chemical Society (SCS) aims to drive the sustainable growth of the Swiss chemical industry by promoting the importance of chemical production and process development in research, education and industry. As the Swiss lakes complement the beauty of its mountains, the Swiss chemical ecosystem finds its blossom in the dense interconnections between its vivid industrial landscape and its world-class academic institutions (cover picture). While industries gain access to state-of-the-art technologies, academics find opportunities to work on real-life challenges. The students involved in collaborations benefit from on-the-job training, and industries can scout and attract talented individuals. This CHIMIA issue distils some brilliant examples where the synergies between Industry and Academia were instrumental to successful chemical development and exemplifies the various topics and models of collaborations, ranging from route scouting and methodology development to modelling and mechanistic investigations.

Wagschal and Broggini leverage the unique expertise of various academic groups to study different disconnections and reactivities towards the functionalization of aryl azoles, a key component in the synthesis of Milvexian. This investigation led to the robust development of a practical synthesis enabling the supply of Milvexian clinical trials.

Buller *et al.* present Excelzyme, an engineering platform dedicated to accelerating biocatalyst's development for large scale synthesis. This highly flexible tool was applied to the development of a KRED for the synthesis of an ipatasertib precursor and resulted in the identification of a suitable mutant with vastly improved properties.

Müller *et al.* describe how the collaboration between Solvias and the University of St Andrews allowed for improved properties and ultimately the industrial implementation of Mn-catalysts for the enantioselective hydrogenation of ketones and lactones.

Chechik *et al.* dive into the mechanistic studies necessary for a safe scale-up using a radical trap. The trapped adducts, easily detected by standard methods (MS and NMR), potentially enable the study of a wide variety of radical processes by helping identify the intermediates involved.

Mantle *et al.* developed Operando Nuclear Magnetic Resonance (NMR) to study transformation happening in trickle bed reactors. In particular, the use of diffusion-T_2-relaxation correlations allows the optimization of the hydrogenation of benzonitrile over a fixed bed of Pd/Al_2O_3 catalyst pellets.

Kandziora, Zogg and coworkers apply a modelling-based Quality by Design approach for the optimization of a telescoped process, which led to a robust process understanding without requiring extensive experimental designs.

Pföss, Marti and coworkers report the unique study of the optimization and up-scaling of a multi-component ZrO_2-SiO_2-Al_2O_3 xerogel. Through this thorough investigation, the sol-gel process was scaled up to an 80 L reactor allowing for the synthesis of over 150 kg of xerogel powder.

Taeschler *et al.* leverage various modelling and simulations to develop a safe industrial distillation process for thermally labile diketene limiting decomposition and fouling effects. The work led to the design of two set-ups with different implications on quality and CAPEX.

I hope reading this will convince you of the outstanding accomplishments that can be obtained by academia and industry working hand in hand.

Lucie Lovelle
On behalf of the DIAC

The CHIMIA Editorial is very grateful to Dr. Lucie Lovelle for her great efforts in organizing this issue on *Academic / Industrial Collaborations in Process Chemistry & Technology* allowing an insight into the technological collaborations that are made throughout Switzerland and beyond.