Reductive Hydrosilylation Chemistry in Continuous Flow: A Toolbox Approach from Lab to Pilot Scale

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Over the last decade the pharmaceutical industry has been increasingly implementing flow processing within R&D programs. The investments of pharma companies and contract manufacturing organizations in the construction of GMP continuous facilities are evidence of the many drivers for the strategic shift from batch to flow manufacturing. The inherent characteristics of the technology grant the access to an increasing number of chemical transformations as well as synthesis shortcuts. Furthermore, in response to the new trend in the small molecules pipelines, the transition to flow processing may facilitate the scale-up process while enabling the flexible production of low annual volumes. In this scenario, we have established a toolbox concept as the right strategy to quickly identify opportunities across the Portfolio and speed-up the process development phase. This approach has allowed the versatile transfer of the reductive hydrosilylation chemistry from batch to flow conditions. The rationale of the manufacturing tool and its application to selected case studies from lab to pilot scale will be presented and discussed.