Title: Flow chemistry as a tool for improved sustainability – Plant concepts and a case study of the production of a fine chemical intermediate

Abstract: Continuous processes are very common in the production of commodities, but still a niche in the production of smaller quantities, which is the case in fine chemical and pharmaceutical industry. Due to the higher pressure in these industries for more sustainable processes and lower production costs as well as the further development of the technology for continuous processing, this is changing.
Microinnova will give an insight in the two main approaches of realizing a continuous production. On one hand a modular and flexible approach for a campaign-like production of different products which actually is done in multi-purpose batch plants, on the other hand a continuous dedicated system for just a single product.
Independently of the approach chosen, continuous manufacturing can increase sustainability significant. This is shown in a joint project of Microinnova and Flamma of the production of an aldehyde from the corresponding alcohol. The batch process uses a Swern-like oxidation with many limitations regarding co- and by-products. In addition, due to the high amount of energy involved, it is necessary to run small scale batches. With the introduction of a continuous process, it was possible to drastically reduce the cycle time and, at the same time, to device a process where most of the solvent and one of the reagents can be recycled.