

Go flow under pressure – Alkoxylation in flow reactors

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Short Abstract:

During the past 20 years, micro reaction technology raised from a pure academic field of research to a technology which can be used in the industrial area of chemical and pharmaceutical industries. Most important benefits as higher heat exchange and better mixing, leading to higher yields, are based on a higher surface to volume ratio in comparison to traditional batch technology. Nevertheless, this technology platform suffers from not yet being established as process technology. Concerns are mainly driven by potential risks of this new technology due to a lack of visible reference projects in production scale. Moreover, most promising market segments to make full use of this technology must be identified. During the past recent years especially epoxide (ethylene oxide, propylene oxide) processing industries showed increased interest in using continuous processes for producing glycols, ethoxylates, ethanol amines and polyols. In the epoxide market segment, a high degree of safety for reactors and plants is mandatory.

Reactions using epoxides e.g. ethylene oxide as reactant are typically highly exothermic and thus the micro reactor technology can fully exploit its strengths due to the high heat exchange capabilities for this kind of reactions. In this presentation, we will take a closer look to this market segment of alkoxylation, the requirements for continuous processes and the resulting tasks on behalf of different case studies. Furthermore, we will contrast the benefits and challenges using scalable micro reactor technology with traditional batch technology in this sector.



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