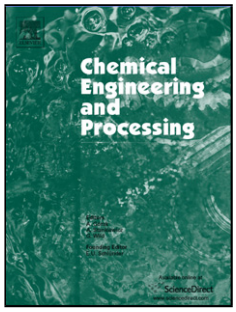


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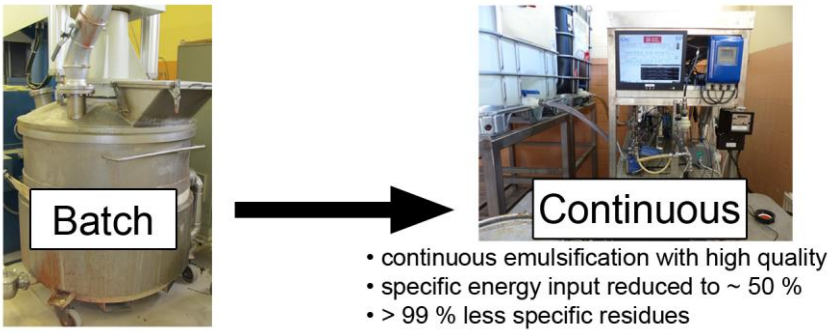
# Energy and resource efficient continuous production of a binder emulsion using microstructured devices

Matthias Wengerter [a], Yongli Li [b], Helmut Nieder [c], Jürgen J. Brandner [b], Martin Schoenitz [a], Stephan Scholl [a]

[a] Technische Universität Braunschweig, Institute for Chemical and Thermal Process Engineering (ICTV), Langer Kamp 7, 38106 Braunschweig, Germany
[b] Karlsruhe Institute for Technology, Institute for Micro Process Engineering (IMVT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany
[c] AURO Pflanzenchemie AG, Braunschweig, Germany

[*] corresponding author: m.wengerter@tu-braunschweig.de, +49(0)531/391-2784

Graphical Abstract




## Highlights

- A batchwise production process was transformed to continuous operation.
- Micro-structured devices enable continuous emulsification of viscous reactant.
- Binder emulsion is produced in an automated plant at a constant high quality level.
- Specific energy input is reduced to ~ 50 % and specific waste production by > 99 %.

## Abstract

This contribution presents a process conversion from discontinuous binder emulsion production at macro scale to microcontinuous operation. The high viscosity of the organic phase represented a challenging product property. With the batch process as a reference, a specification benchmark to be matched by continuously manufactured product was determined. Based on these criteria and despite the high pressure drop, a feasible continuous production process using microstructured devices was developed and industrially implemented. Process development focused on energy efficient, automated production which led to energy savings and improved process stability as well as product quality. Longer