Torsten Stelzer, Ph.D.

Research Areas and Active Projects

The Stelzer Research Group is focusing on pharmaceutical crystallization with an emphasis on small-scale manufacturing from purification and separation to novel formulation techniques. Our research addresses the needs of the pharmaceutical industry and bridges the gap between academic and industrial research and development with the aid of experimental and model-driven design tools. The specific areas of interest are:

- Crystallization from solution and melt of small and macro (protein) molecules
  - Nucleation and control of polymorphism
  - Liquid-liquid phase separation and control
  - Novel continuous formulation techniques
  - Development and optimization of batch and continuous processes
  - Case studies: bulk chemicals, fine chemicals, pharmaceuticals, biopharmaceuticals, food chemicals, etc.
- Process intensification
  - Design and optimization of novel manufacturing equipment
  - Development of new manufacturing methods (multi-functional, hybrid)
  - Case studies of process intensification
- Small-scale manufacturing
  - Purification, separation, and formulation
  - Integration of sensors and detectors for process analytical technology (PAT)
  - Case studies of small-scale manufacturing

At the interface of Chemistry, Engineering, and Pharmaceutical Sciences our laboratory offers a unique multidisciplinary work environment by combining student training and fundamental research with an application-driven technology platform dedicated to the miniaturization of pharmaceutical manufacturing and the transfer of knowledge through strong academic/industrial collaborations.
Publications

Peer Reviewed Journal Contributions


**Book Contributions**


Ulrich, J., Stelzer, T.: “Melt Crystallization”, in *Crystallization - Basic*


**Proceedings**


**Patents**


**Presentations**


