Open Thesis (BA, MA)

Mechanistic modeling of a crystallization process

Description:

The purpose of this work is to implement a model of the mineralization process of $\text{ZrO}_2$ particles inside a $\text{ZrOCl}_2$ solution. This system is under consideration of our collaborators, the Institute of material science of the University of Stuttgart and it is desired to know how the crystallization process may be influenced by factors such as pH, temperature, substrate concentration and solvent. For implementing this model, the well studied theory of population balance based modeling is already at hand. The main work therefore is to identify the chemical reaction mechanisms and implement the population balance based model. Some laboratory data is already available for evaluation or training of the resulting model.

Prerequisites:

- Courses *Introduction to Systems Biology* or *Systems Theory in Systems Biology*, *Höhere Mathematik 3* or equivalent
- Experience in Matlab
- Interested in chemical processes, population modeling, partial differential equations

Supervisor:

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Area:

Systems Biology

Properties:

Type: BA, MA
40% literature
40% implementation
20% simulation

Beginning:

now

Weitere Informationen: www.ist.uni-stuttgart.de/education/sada

Aushang vom 17. Februar 2015