

Short Introduction of Workshop no. 4

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Biochemical engineering methods for biological waste treatment

Mechanistic models of one unit operation (i.e. a fermentor) or a series of unit operations (a fermentor with several downstream processing steps) can be useful to investigate in silico how improvements can be made to the process operation to further reduce operating costs. A reference process model can be used for comparing, or "benchmarking", control strategies. In the environmental engineering field, the use of benchmark systems for process performance assessment and control system evaluation is well-established, especially for the evaluation of wastewater treatment plant control strategies. A similar benchmark initiative for fermentation and biocatalysis processes would be desirable. The main purpose of this workshop is to introduce the key ideas behind the wastewater treatment benchmarking initiative, and to highlight modeling methods and tools - for example sensor models, or global uncertainty analysis techniques - which have been developed or applied in the frame of the benchmarking initiative. Additionally, modeling and process performance comparison tools currently applied on industrial fermentations will be presented. The workshop will conclude with a discussion around the potential use of "benchmarking tools" on fermentation and biocatalysis processes