

Dynamic optimization approach for the identification of batch bioreactor

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Design of experiment (DoE) is the way of finding the optimal way to identify the system of interest. Until now, DoE practitioners calculated the optimal input sequence by one-time optimization. In other words, process data acquired during the batch was not utilized. In the complex and long time-scale process like fed-batch bioreactor, this feedback data can be used to significantly improve the quality of experiment. In our study, model predictive control (MPC) was used as dynamic optimization frame to incorporate DoE principle. We demonstrate that MPC can successfully improve the quality of experiment calculated by DoE principles during the batch.