



## Multi objective dynamic operation of a continuous osillatory baffled zeolite synthesis reactor using uncertain day-ahead predictions

### General description:

The electrification of the energy supply requires major changes in the process industry, which brings new challenges and opportunities for process operation. Especially, the usage of renewable electric energy sources is a main challenge due to the highly volatility of production and price. The hydrothermal synthesis of zeolites requires long processing times at elevated temperatures, which poses a challenge for the economical and ecological efficient operation at fluctuating energy supplies. The usage of model-based optimization techniques circumvent this problem and enables a flexible energy price based zeolite production. When optimizing the future operation the energy price is still unknown. Therefore, there exist several energy price prediction models. However, forecast and the energy price differ. The objective of this work is to quantify these differences and include the prediction uncertainty in the optimization.

### Objectives / Milestones:

- Literature research
- Performance measure of Energy price forecasting model
- Implementation and testing of multi objective optimization in an existing dynamic optimization framework (python)

### Prerequisites

- Basic programming skills
- Interest and motivation in theoretical work

### Others:

- Language: English or German

### Contact:

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