Professur für Chemische und Thermische Verfahrenstechnik
Campus Straubing für Biotechnologie und Nachhaltigkeit
Technische Universität München

TUM

Theoretical Bachelor thesis, Scientific Internship

Analysis of enzyme assay experiments through non-linear regression

Description

At the Chemical Process Engineering group of the TUM, Campus Straubing the modelling and optimization of systems of enzyme-catalyzed reactions takes place. The modelling of such systems is always based on enzyme assays. These assays are used to investigate the dependence of the reaction rate of an enzyme-catalyzed reaction to the concentrations of different substrates and inhibitors.

The main task of the offered project is to analyze enzyme assay data and to fit them to the Michaelis-Menten equation using two different numerical methods. SigmaPlot, python and the python-based modeling and optimization language pyomo will be used. A comparison of the two methods will be carried out using published enzyme assay data for an enzyme of industrial interest. Finally, conclusions will be drawn for which method is faster and easier to apply.
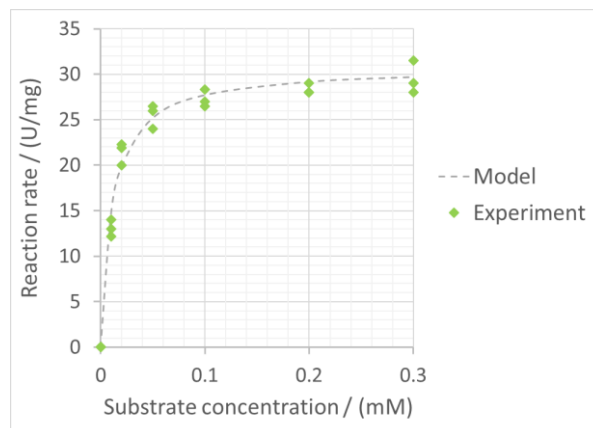

Figure 1: The Michaelis-Menten equation fitted to enzyme assay data.

Requirements

Programming experience and good knowledge of the English language are required. Knowledge in any of the following topics is appreciated: reaction engineering, reaction kinetics, enzyme-catalyzed reactions.

To start

Immediately

Technical University of Munich

TUM Campus Straubing
Leandros Paschalidis, M. Sc.
Uferstr. 53, 94315 Straubing
Raum: 01.112
Tel. +49 (0) 9421 187-292
leandros.paschalidis@tum.de
www.cs.tum.de
www.tum.de