

3-years PhD position

Chair of Chemical Biotechnology, TU Dortmund, Germany

Application of CLEAs in a Segmented Flow Capillary Microreactor System

The project

Aim of this project is the application of CLEAs (cross-linked enzyme aggregates) in a segmented flow capillary microreactor system for the synthesis 2,3-dihydroxybiphenyl and derivatives, utilizing 2-hydroxybiphenyl-3-monooxygenase HbpA.

HbpA is a one-component tetrameric protein with a non-covalently bound FAD, relying on NADH for activity. The project will investigate pure HbpA-, and NADH-regenerating-CLEAs, as well as Combi-CLEAs consisting out of both enzymes. The preparation methods of CLEAs are quite diverse and the best procedure for the respective enzymes has to be identified. This will require a high throughput screening of the different preparation possibilities. The produced CLEAs have to be characterized in respect to: -Enzyme activities, -Enzyme kinetics, -Mass transfer limitations, -Stabilities, -Comparison to free enzyme, -Ratios of both enzymes in pure and CombiCLEAs, etc.

(Combi)-CLEAs will be applied in a capillary microreactor system. Final goal is a running reactor including a proper phase separation and biocatalyst recycling, which should be able to produce at least 1g of product in an acceptable time range.

The basis

The HbpA production and purification is already established in-house. Knowledge on CLEA preparation of this specific enzyme is available at the TU DO, at the TU Delft and with CLEA Technologies (NL). It is intended, that the candidate will spent some month at the respective institutions for achieving expertise in the different preparation methods.

Requirements

Interested candidates should have a strong background in bioengineering, or biotechnology with a solid basis in microbiology/molecular biology and biochemistry. This project is part of an EU funded initial training network (Marie-Curie ITN Fellowship). Therefore only candidates from the EU or associated countries will be considered who have not resided in Germany longer than 12 month during the last three years. For more information on the network please visit:

http://www.coebio3.org/view_news_item.asp?id=19

Start: April 2010

Contact:

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