“Process engineering strategies towards efficient biocatalytic processes”

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The application of nature’s catalysts “enzymes” for the synthesis of chemicals is a key emerging field of industrial biotechnology to meet current and future needs of our society for sustainable manufacturing of chemicals. Nature uses an elegant and efficient synthetic strategy: Coupling enzymes in multi-step pathways without intermediate isolation and purification steps with a precise spatial control of catalysis. Inspired by nature, the design of multi-step biotransformations has been attracting great attention within the biocatalysis community. The talk covers enzymatic (cascade) reactions and demonstration of those at the industrially relevant conditions with the help of process engineering. In particular, two use cases will be introduced covering peroxygenases and decarboxylases in cascading systems exploring the use of non-conventional media and different operational mode for enhancing the efficiency of these enzymatic applications.