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CONFÉRENCE CCVC

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GREEN CHEMISTRY THROUGH BIOCATALYSIS: FROM PROCESS DEVELOPMENT TOWARDS INTEGRATION IN CHEMOENZYMATIC ONE-POT PROCESSES

MERCREDI 26 MARS 2014
Salle **G-815**, Pavillon Roger-Gaudry
11 h

Our research group has developed many new processes applying innovative biocatalyst concepts, some of which are running on industrial scale. A particular highlight is the highly efficient asymmetric biocatalytic reduction and reductive amination technology based on the use of recombinant whole cell catalysts. Both types of processes run at high substrate loading of typically >100 g/L and give the desired products with >99% ee. Recently, we have developed new biocatalytic processes using enoate reductases (for C=C reduction) and L-threonine aldolases (for aldol reactions). Furthermore, various chemoenzymatic one-pot multi-step processes in water have been developed by combining "classic" chemical reactions, metal-catalyzed reactions and organocatalytic reactions, respectively, with enzymatic transformations, leading to an efficient formation of the desired products with excellent enantioselectivity. These research achievements underline that such combinations of the two worlds of catalysis (chemocatalysis and biocatalysis) are possible, enabling advantageous synthetic processes, which avoid solvent-intensive and waste-generating process steps. Furthermore, we could successfully apply biocatalysts in the enantioselective (multi-step) synthesis of pharmaceutically relevant molecules. By means of different types of biotransformations as key steps, novel synthetic approaches towards non-natural α-amino acids, β-amino acid derivatives and specific chiral alcohols have been realized.

Merci à nos commanditaires

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