

Heterogeneous biocatalytic reaction cascades training network

PROJECT DETAILS

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Funding Scheme: European Industrial Doctorates

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Website: <http://www.h2020interfaces.eu/>

CORDIS link: <https://cordis.europa.eu/project/id/860414>

PROJECT DESCRIPTION

The INTERfaces program will train 14 Early Stage Researches (ESRs) within an European Industrial Doctoral (EID) network jointly designed by European academic and industry partners in innovative research projects dedicated to developing clean bioprocesses for the production of chemicals. The assembly of biocatalysts to reaction sequences allows avoiding steps for isolation and purification of intermediates and thus a significant improvement of the environmental footprint of the catalytic processes. The main goal of INTERfaces is the extension of this concept towards multi-step biocatalytic transformations in immobilized form. These "Heterogeneous Biocatalytic Reaction Cascades" will greatly facilitate re-use of the catalysts and further simplify downstream-processing, I

INTERfaces combines material science and protein engineering to design tailored enzymes and (bio-based) materials that will complement each other to obtain optimized heterogeneous biocatalysts. These tools will be applied to solve synthetic challenges in the use of two bio-based monomers as starting materials to synthesize products for application fields like antioxidants and biopolymers. Process optimization and up-scale in industry will reveal key factors for synthetic utilization of the biocatalytic preparations. INTERfaces emphasizes particularly the engineering of the designed cascades in solid phase. This includes the design of reactors, use of computational modeling tools, application of the right operational modes, and reaction medium needed for desired space-time-yields and product titers. Commercial relevant processes will be up-scaled-up together with industry for technical implementation.

13 non-academic partners ranging from high-tech SMEs to large producing companies and 9 academic institutions offer an intersectoral and interdisciplinary environment to provide 14 Ph.D. candidates with outstanding employability profiles for the European Biotech Sector. Dedicated workshops and well-balanced supervisory team aim at increasing the gender diversity in biotech research. From the 14 selected ESRs, two will perform their Doctoral Thesis inside the Doctorate Programme in Synthesis and Chemical Reactivity at Universidad de Oviedo, one under the co-supervision of the Swedish company EnginZyme, and the other in cooperation with the Italian biotechnological SME BioPox.

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