EnzyFlowTex - Textile-fixed enzymes for the synthesis of chiral intermediates in the pharmaceutical industry

The overall objective of the project was the development of a technology for the chemo-enzymatic synthesis of fine chemicals with the aid of enzymes immobilized on textiles and the development of a corresponding flow reactor for the process-engineering realization of new synthesis routes for high-purity, chiral specialty chemicals for pharmaceutical chemistry. It was shown that enzymes could be permanently immobilized on textiles while retaining their biocatalytic activity. The textile immobilizates are generally suitable for organic syntheses of commercial relevance. The establishment of an appropriate flow reactor proved to be simple and inexpensive. Even if the activity and stability of the investigated textile-supported enzymes are not yet sufficient for commercialization, the ZIM project makes an important contribution to the establishment of the flow technology considered here. In addition, it was shown that a textile-supported peroxidase produces singlet oxygen and that this can be used in 4+2 cycloadditions. This opens new avenues in organic synthesis and generates new R&D needs in the future.

Figure 1: Textile with immobilized lipase.

Project Information:

Title (German):	EnzyFlowTex - Mit textilgeträgerten Enzymen zu neuen Syntheseprozessen für chirale Intermediate der pharmazeutischen Industrie
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