**16c Immobilised Enzyme to Perform Enantiomerically Pure Reductive Aminations in Presence of Organic Solvents**

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The use of enzymes in non-aqueous systems is nowadays regarded as a very “hot topic”: in fact, the possibility of extending the functions of natural catalysts to more suitable synthetic industrial methods may represent a way to cut down production costs increasing the efficiency.

We have been recently patented the use of engineered Phenylalanine dehydrogenase (PheDH) from Bacillus sphaericus in the synthesis of non-natural amino acid (Irish Patent 2004 Application No. S2004/0547) where the poor solubility of certain precursors was a limiting factor for large scale process. The addition of organic solvent to the reaction mixture greatly improved the solubility (hence the concentration) of such substrates, and here we are reporting the study carried out on a particular mutant (N145A PheDH) adsorbed on Celite, to enhance its stability when used in presence of high percentage of polar or non-polar organic solvents such as acetone, methanol, n-hexane, toluene and methylene chloride. PheDH is a cofactor dependent enzyme, it requires NADH to transform phenylpyruvic acid into L-phenylalanine, so an additional enzymatic system has been introduce to regenerate the cofactor reducing further the costs of the process.