Artificial metalloenzymes for enantioselective catalysis based on biotin-avidin

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Year 2003
Title Artificial metalloenzymes for enantioselective catalysis based on biotin-avidin
Journal Journal of the American Chemical Society
Volume 125
Number 30
Pages / **Article-Number** 9030-1
Keywords Avidins Role: CAT (Catalyst use), USES (Uses) (biotinylated complexes; artificial metalloenzymes for enantioselective catalysis based on biotin-avidin); Enzymes Role: CAT (Catalyst use), USES (Uses) (metallo-, artificial; for enantioselective catalysis based on biotin-avidin); Hydrogenation (stereoselective, of acetamidoacrylic acid; artificial metalloenzymes for enantioselective catalysis based on biotin-avidin); artificial metalloenzyme enantioselective catalyst biotin avidin amino acid
Homogeneous and enzymatic catalysis offer complementary means to generate enantiomerically pure compounds. Incorporation of achiral biotinylated rhodium−diphosphine complexes into (strept)avidin yields artificial metalloenzymes for the hydrogenation of N-protected dehydroamino acids. A chemogenetic optimization procedure allows one to produce (R)-acetamidoalanine with 96% enantioselectivity. These hybrid catalysts display features reminiscent both of enzymatic and of homogeneous systems.
Publisher American Chemical Society
ISSN/ISBN 0002-7863 ; 1520-5126
edoc-URL http://edoc.unibas.ch/dok/A5254438
Full Text on edoc No;
Digital Object Identifier DOI 10.1021/ja035545i
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/15369356
ISI-Number WOS:000184364500032
Document type (ISI) Journal Article