

AIMS AND SCOPE

Although total synthesis reached extraordinary levels of sophistication in the last century, the development of practical and efficient synthetic methodologies is still in its infancy. The goal of achieving chemical reactions that are economical, safe, environmentally benign, resource- and energy-saving will demand the highest level of scientific creativity, insight and understanding in a combined effort by academic and industrial chemists.

Advanced Synthesis & Catalysis is designed to stimulate and advance that process by focusing on the development and application of efficient synthetic methodologies and strategies in organic, bioorganic, pharmaceutical, natural product, macromolecular and materials chemistry. The targets of synthetic studies can range from natural products and pharmaceuticals to macromolecules and organic materials. While metal catalysis, biocatalysis and organocatalysis play an ever increasing role in achieving synthetic efficiency, all areas of interest to the practical synthetic chemist fall within the purview of *Advanced Synthesis & Catalysis*, including synthesis design, reaction techniques, separation science and process development.

Contributions from industrial and governmental laboratories are highly encouraged. It is the goal of the journal to help initiate a new era of chemical science, based on the efforts of synthetic chemists and on interdisciplinary collaboration, so that chemistry will make an even greater contribution to the quality of life than it does now.

Advanced Synthesis & Catalysis

succeeding *Journal für praktische Chemie*
(founded in 1828)

New! Online Submission
now available at
<http://asc.wiley-vch.de>

2007, 349, 8+9, Pages 1269–1420

Issue 7/2007 was published online on May 18, 2007

COMMENTARIES

Catalytic Production of Chemicals, Fuels and Polymers via
Engineered Microorganisms

Adv. Synth. Catal. **2007**, 349, 1283–1284

Mark J. Burk*

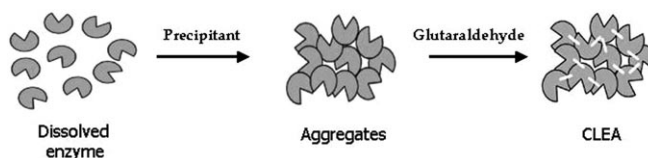
1283

- 1285** Catalytic Platforms for Biotechnology
Adv. Synth. Catal. **2007**, 349, 1285–1286
Wolf-Dieter Fessner*

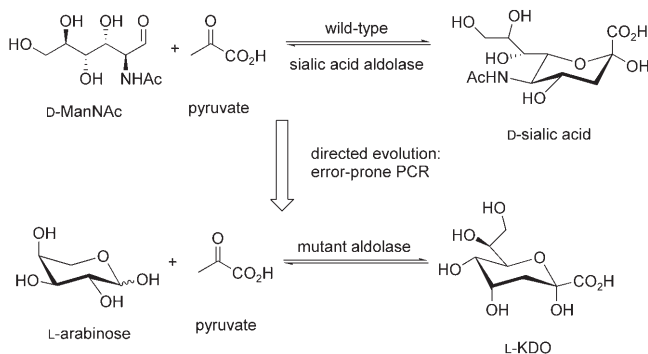
- 1287** New Developments in Biocatalysis
Adv. Synth. Catal. **2007**, 349, 1287
Chi-Huey Wong*

REVIEWS

- 1289** Enzyme Immobilization: The Quest for Optimum Performance
Adv. Synth. Catal. **2007**, 349, 1289–1307
Roger A. Sheldon*



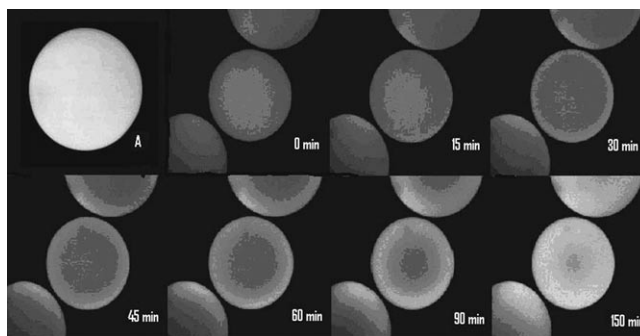
- 1308** Recent Advances in Aldolase-Catalyzed Asymmetric Synthesis
Adv. Synth. Catal. **2007**, 349, 1308–1320
Stephen M. Dean, William A. Greenberg,* Chi-Huey Wong*



COMMUNICATIONS

- 1321** Real-Time Imaging of Protease Action on Substrates Covalently Immobilised to Polymer Supports
Adv. Synth. Catal. **2007**, 349, 1321–1326

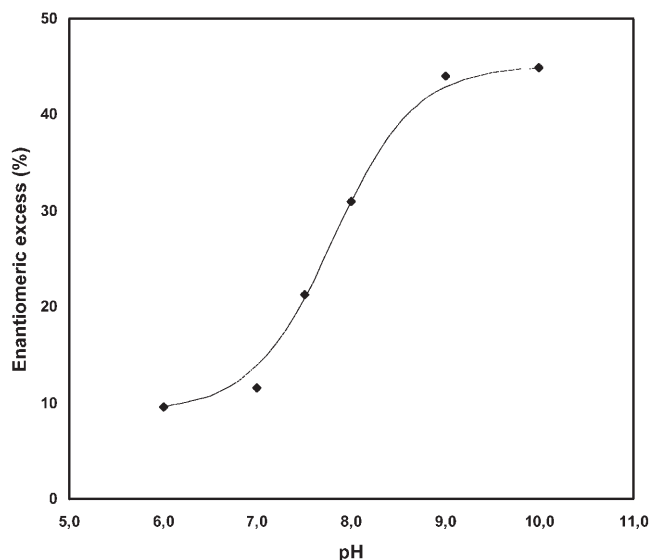
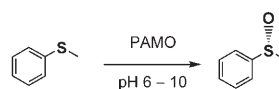
 Joseph Deere,* Gail McConnell, Antonia Lalaoui, Beatrice A. Maltman, Sabine L. Flitsch, Peter J. Halling*



Titration and Assignment of Residues that Regulate the Enantioselectivity of Phenylacetone Monooxygenase

Adv. Synth. Catal. **2007**, 349, 1327–1331

Francesca Zambianchi, Marco W. Fraaije, Giacomo Carrea, Gonzalo de Gonzalo, Cristina Rodríguez, Vicente Gotor, Gianluca Ottolina*

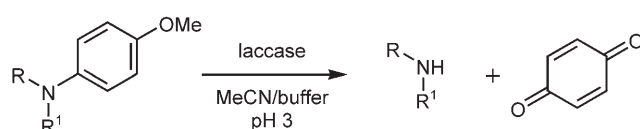


1327

Laccase-Mediated Deprotection of *para*-Methoxyphenyl (PMP)-Protected Amines

Adv. Synth. Catal. **2007**, 349, 1332–1336

Jorge M. M. Verkade, Lieke J. C. van Hemert, Peter J. L. M. Quaedflieg, Hans E. Schoemaker, Martin Schürmann, Floris L. van Delft, Floris P. J. T. Rutjes*

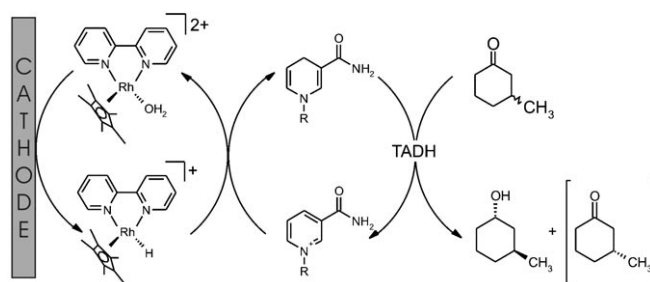


1332

Electroenzymatic Asymmetric Reduction of *rac*-3-Methylcyclohexanone to (1*S*,3*S*)-3-Methylcyclohexanol in Organic/Aqueous Media Catalyzed by a Thermophilic Alcohol Dehydrogenase

Adv. Synth. Catal. **2007**, 349, 1337–1340

Volker Höllrigl, Katja Otto, Andreas Schmid*

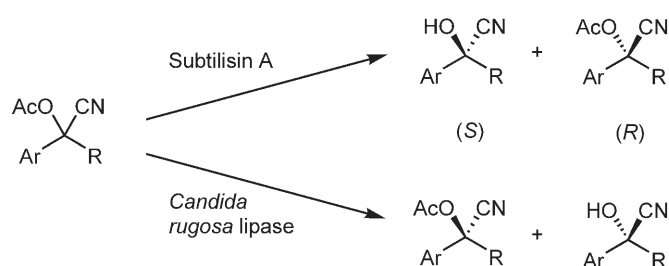


1337

Hydrolase-Catalysed Preparation of Chiral α,α -Disubstituted Cyanohydrin Acetates

Adv. Synth. Catal. **2007**, 349, 1341–1344

Jarle Holt, Isabel W. C. E. Arends, Adriaan J. Minnaard, Ulf Hanefeld*

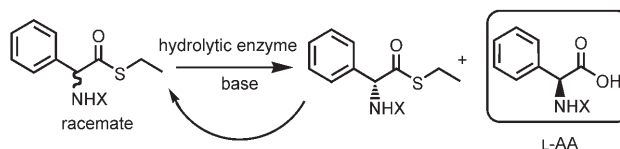


1341

1345 Chemo-Enzymatic Dynamic Kinetic Resolution of Amino Acid Thioesters

Adv. Synth. Catal. **2007**, 349, 1345–1348

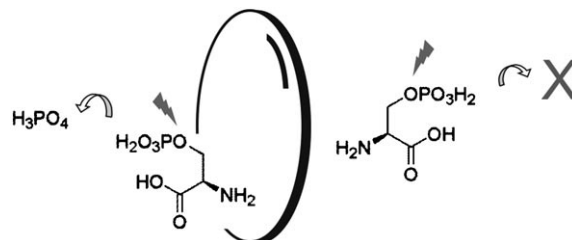
Dario Arosio, Antonio Caligiuri, Paola D'Arrigo,
Giuseppe Pedrocchi-Fantoni, Cristina Rossi,
Caterina Saraceno, Stefano Servi,* Davide Tessaro



1349 Optimization of the Kinetic Resolution of the **DL**-Phosphomonoesters of Threonine and Serine by Random Mutagenesis of the Acid Phosphatase from *Salmonella enterica*

Adv. Synth. Catal. **2007**, 349, 1349–1352

Teunie van Herk, Aloysius F. Hartog, Harald J. Ruijsenaars,
Richard Kerkman, Hans E. Schoemaker, Ron Wever*

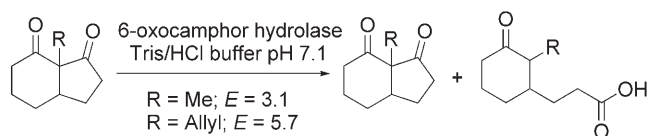


FULL PAPERS

1353 On the Resolution of Chiral Substrates by a *retro*-Claisenase Enzyme: Biotransformations of Heteroannular Bicyclic β -Diketones by 6-Oxocamphor Hydrolase

Adv. Synth. Catal. **2007**, 349, 1353–1360

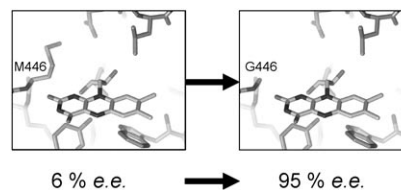
Cheryl L. Hill, Lee Chiang Hung, Derek J. Smith,
Chandra S. Verma, Gideon Grogan*



1361 Altering the Substrate Specificity and Enantioselectivity of Phenylacetone Monooxygenase by Structure-Inspired Enzyme Redesign

Adv. Synth. Catal. **2007**, 349, 1361–1368

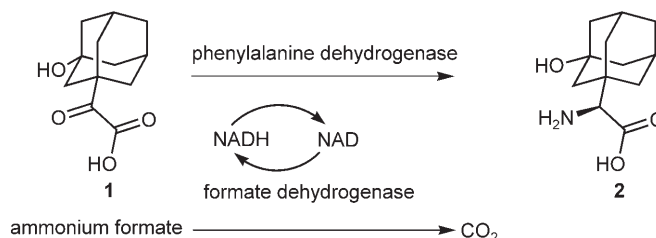
Daniel E. Torres Pazmiño, Radka Snajdrova,
Daniela V. Rial, Marko D. Mihovilovic,* Marco W. Fraaije*



1369 Preparation of an Amino Acid Intermediate for the Dipeptidyl Peptidase IV Inhibitor, Saxagliptin, using a Modified Phenylalanine Dehydrogenase

Adv. Synth. Catal. **2007**, 349, 1369–1378

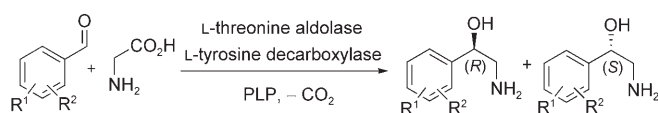
Ronald L. Hanson,* Steven L. Goldberg,
David B. Brzozowski, Thomas P. Tully, Dana Cazzulino,
William L. Parker, Olav K. Lyngberg, Truc C. Vu,
Michael K. Wong, Ramesh N. Patel



Synthesis of Aromatic 1,2-Amino Alcohols Utilizing a Bienzymatic Dynamic Kinetic Asymmetric Transformation

Adv. Synth. Catal. **2007**, 349, 1379–1386

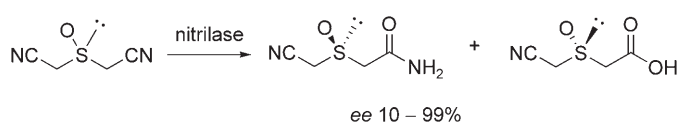
Johannes Steinreiber, Martin Schürmann, Friso van Assema, Michael Wolberg, Kateryna Fesko, Christoph Reisinger, Daniel Mink, Herfried Griengl*



1379

Enzyme-Promoted Desymmetrisation of Prochiral Bis(cyanomethyl) Sulfoxide

Adv. Synth. Catal. **2007**, 349, 1387–1392

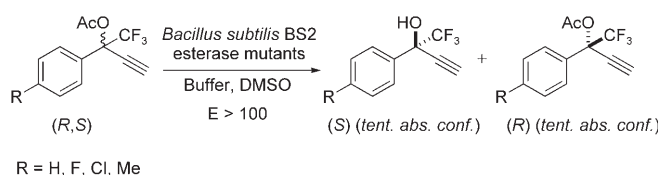


1387

Piotr Kielbasiński,* Michał Rachwalski, Marian Mikołajczyk, Małgorzata Szyrej, Michał W. Wieczorek, Roel Wijtmans, Floris P. J. T. Rutjes*

Highly Enantioselective Synthesis of Arylaliphatic Tertiary Alcohols using Mutants of an Esterase from *Bacillus subtilis*

Adv. Synth. Catal. **2007**, 349, 1393–1398



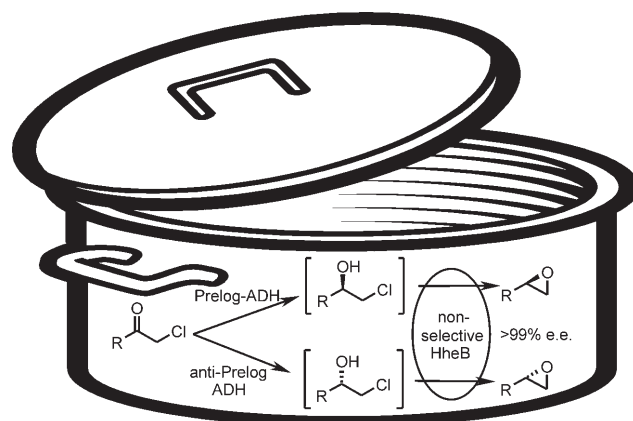
1393

Robert Kourist, Sebastian Bartsch, Uwe T. Bornscheuer*

Stereo-Complementary Two-Step Cascades Using a Two-Enzyme System Leading to Enantiopure Epoxides

Adv. Synth. Catal. **2007**, 349, 1399–1404

Birgit Seisser, Iván Lavandera, Kurt Faber, Jeffrey H. Lutje Spelberg, Wolfgang Kroutil*

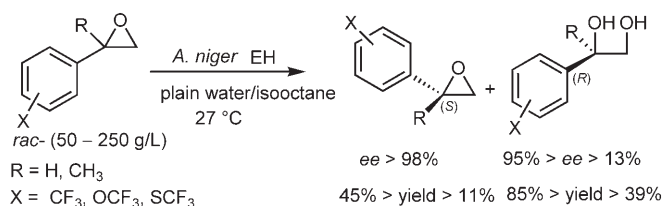


1399

Enzymatic Transformations 63. High-Concentration Two Liquid-Liquid Phase *Aspergillus niger* Epoxide Hydrolase-Catalysed Resolution: Application to Trifluoromethyl-Substituted Aromatic Epoxides

Adv. Synth. Catal. **2007**, 349, 1405–1417

Justine Deregnacourt, Alain Archelas,* Fabien Barbirato, Jean-Marc Paris, Roland Furstoss

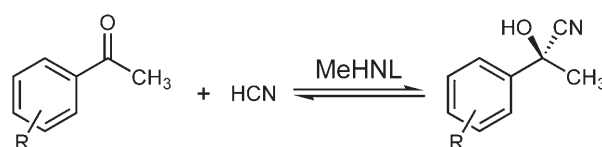


1405

Hydroxynitrile Lyase in Organic Solvent-Free Systems to Overcome Thermodynamic Limitations

Adv. Synth. Catal. **2007**, 349, 1418–1424

Jan von Langermann, Annett Mell, Eckhard Paetzold, Thomas Daußmann, Udo Kragl*

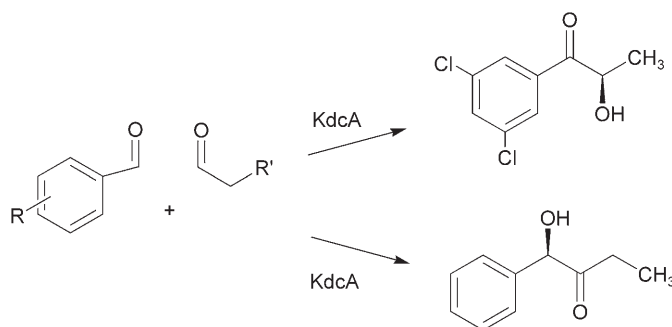


1418

- 1425** Branched-Chain Keto Acid Decarboxylase from *Lactococcus lactis* (KdcA), a Valuable Thiamine Diphosphate-Dependent Enzyme for Asymmetric C–C Bond Formation

Adv. Synth. Catal. **2007**, 349, 1425–1435

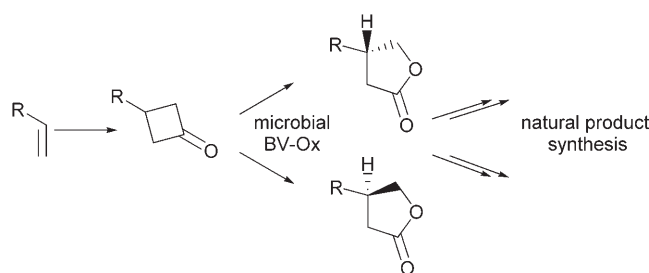
 Dörte Gocke, Cong Luan Nguyen, Martina Pohl,*
Thomas Stillger, Lydia Walter, Michael Müller



- 1436** Comparing the Stereoselective Biooxidation of Cyclobutanones by Recombinant Strains Expressing Bacterial Baeyer–Villiger Monooxygenases

Adv. Synth. Catal. **2007**, 349, 1436–1444

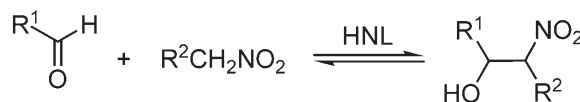
 Florian Rudroff, Joanna Rydz, Freek H. Ogink,
Michael Fink, Marko D. Mihovilovic*



- 1445** Hydroxynitrile Lyase-Catalyzed Enzymatic Nitroaldol (Henry) Reaction

Adv. Synth. Catal. **2007**, 349, 1445–1450

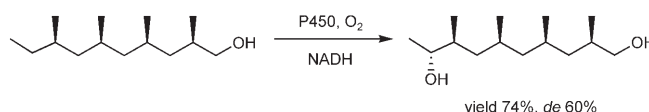
Mandana Gruber-Khadjawi, Thomas Purkarthofer,
Wolfgang Skranc, Herfried Griengl*



- 1451** Hydroxylation of Dodecanoic Acid and (2*R*,4*R*,6*R*,8*R*)-Tetramethyldecanol on a Preparative Scale using an NADH-Dependent CYP102A1 Mutant

Adv. Synth. Catal. **2007**, 349, 1451–1461

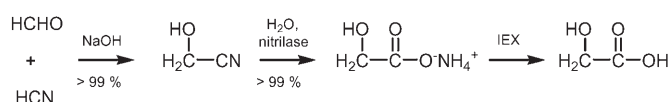
Katja Kühnel, Steffen C. Maurer, Yana Galeyeva,
Wolfgang Frey, Sabine Laschat, Vlada B. Urlacher*



- 1462** Chemoenzymatic Synthesis of Glycolic Acid

Adv. Synth. Catal. **2007**, 349, 1462–1474

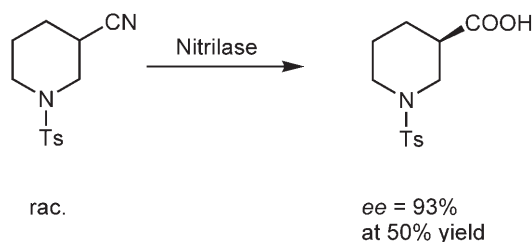
Anna Panova, Lawrence J. Mersinger, Qiang Liu,
Thomas Foo, D. Christopher Roe, William L. Spillan,
Amy E. Sigmund, Arie Ben-Bassat, L. Winona Wagner,
Daniel P. O’Keefe, Shijun Wu, Kelly L. Petrillo,
Mark S. Payne, Stephen T. Breske, F. Glenn Gallagher,
Robert DiCosimo*



- 1475** Nitrilase-Catalyzed Enantioselective Synthesis of Pyrrolidine- and Piperidinecarboxylic Acids

Adv. Synth. Catal. **2007**, 349, 1475–1480

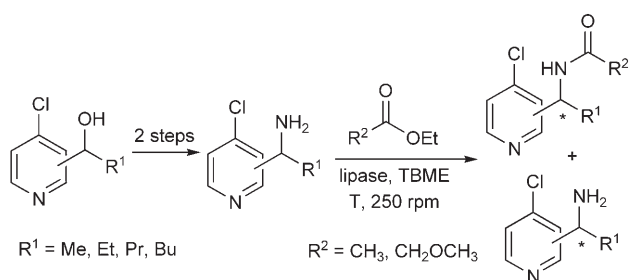
 Margit Winkler, Dorith Meischler, Norbert Klempier*



Enzymatic Preparation of Novel Aminoalkylpyridines using Lipases in Organic Solvents

Adv. Synth. Catal. **2007**, 349, 1481–1488

Oliver Torre, Eduardo Busto, Vicente Gotor-Fernández, Vicente Gotor*

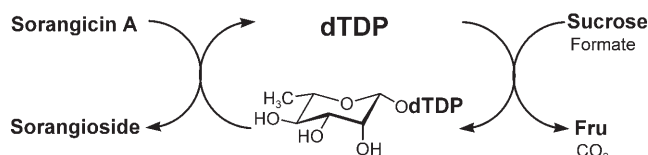


1481

An Enzyme Module System for *in situ* Regeneration of Deoxythymidine 5'-Diphosphate (dTDP)-Activated Deoxy Sugars

Adv. Synth. Catal. **2007**, 349, 1489–1496

Carsten Rupprath, Maren Kopp, Dennis Hirtz, Rolf Müller,*
Lothar Elling*

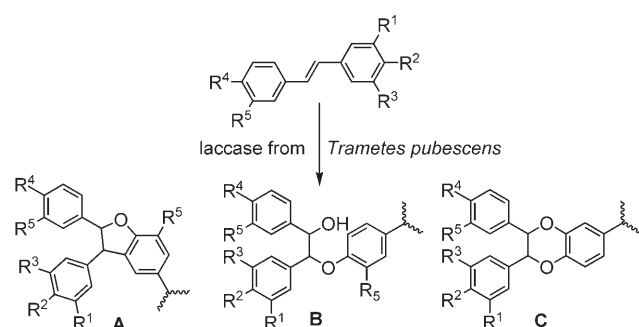


1489

Laccase-Catalyzed Dimerization of Hydroxystilbenes

Adv. Synth. Catal. **2007**, 349, 1497–1506

Chiara Ponzoni, Elisa Beneventi, Maria Rita Cramarossa,
Stefano Raimondi, Giulia Trevisi, Ugo Maria Pagnoni,
Sergio Riva,* Luca Forti*

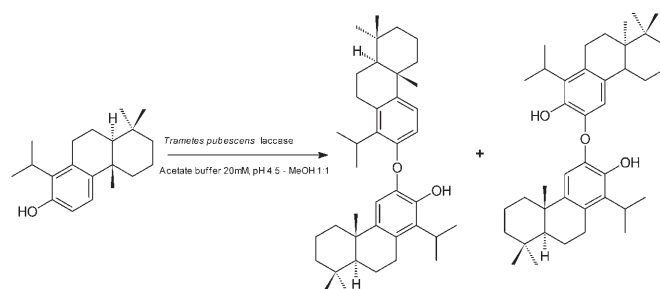


1497

Laccase-Mediated Oxidation of Totarol

Adv. Synth. Catal. **2007**, 349, 1507–1513

Sandile Ncanana, Lara Baratto, Lucia Roncaglia,
Sergio Riva, Stephanie G Burton*

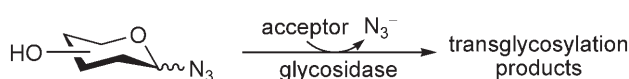


1507

Glycosyl Azides – An Alternative Way to Disaccharides

Adv. Synth. Catal. **2007**, 349, 1514–1520

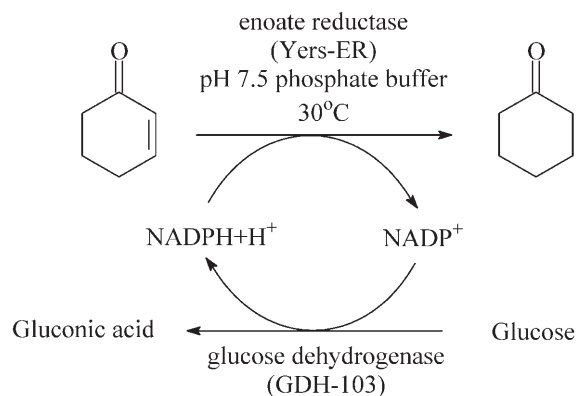
Pavla Bojarová, Lucie Petrásková, Erica Elisa Ferrandi,
Daniela Monti, Helena Pelantová, Marek Kuzma,
Pavla Simerská, Vladimír Křen*



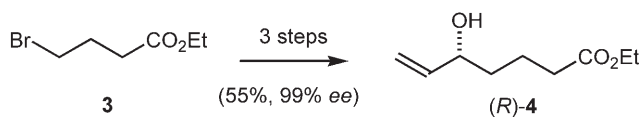
1514

1521 Comparison of Three Enoate Reductases and their Potential Use for Biotransformations*Adv. Synth. Catal.* **2007**, 349, 1521–1531

Javier F. Chaparro-Riggers, Thomas A. Rogers, Eduardo Vazquez-Figueroa, Karen M. Polizzi, Andreas S. Bommarius*

**UPDATE****1533** Efficient Synthesis of Either Enantiomer of Ethyl 5-Hydroxyhept-6-enoate*Adv. Synth. Catal.* **2007**, 349, 1533–1536

Thomas Fischer, Jörg Pietruszka*

 Supporting information on the WWW (see article for access details).

*Author to whom correspondence should be addressed.