

Release: SOS 4.27, December 2022

What's
New?

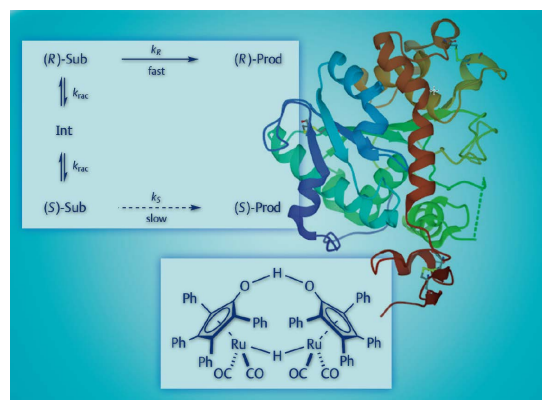
New: Dynamic Kinetic Resolution (DKR) and Dynamic Kinetic Asymmetric Transformations (DYKAT)

Dynamic kinetic resolution (DKR) is a powerful process whereby a racemic starting material can be transformed in catalytic processes into a single isomer of a chiral compound in up to 100% yield. Whereas DKR applies to the resolution of racemic mixtures, when diastereomers, either as starting materials or as diastereomeric intermediates, are involved in the resolution process under dynamic conditions, the reactions are classified as “dynamic kinetic asymmetric transformations” (DYKAT). DKR and DYKAT are valuable tools for the preparation of enantiomerically enriched compounds that are of great importance in society today, in particular in pharmaceutical chemistry and in the agrochemical sector.

This volume, edited by **Prof. Jan-Erling Bäckvall**, covers the principles of DKR and DYKAT and presents examples of organocatalytic, chemoenzymatic, and transition-metal catalyzed approaches, including applications in the synthesis of complex, biologically active compounds.



Prof. J.-E. Bäckvall



Reviews include: (titles are clickable links)

- **Dynamic Kinetic Resolution and Dynamic Kinetic Asymmetric Transformation: Concepts, Classification, and Computing Tools**
C. K. Winkler, K. Faber, and W. Kroutil
- **Organocatalytic Dynamic Kinetic Resolution**
X. Wu, Y. Liu, and Z. Jin
- **Organocatalytic Dynamic Kinetic Asymmetric Transformations**
A. Córdova, K. Zhang, and L. Deiana
- **Chemoenzymatic Dynamic Kinetic Resolution of Amines**
K. Adriaensen and D. De Vos
- **Chemoenzymatic Dynamic Kinetic Resolution of Alcohols**
K. Kanomata and S. Akai
- **Applications of Chemoenzymatic Dynamic Kinetic Resolution for the Synthesis of Biologically Active Compounds and Natural Products**
S. González-Granda and V. Gotor-Fernández
- **Chemoenzymatic Dynamic Kinetic Asymmetric Transformation**
O. Pàmies
- **Transition-Metal-Catalyzed Dynamic Kinetic Asymmetric Transformations (DYKATs) and Stereoablative Transformations**
N. J. Hafeman, S. R. Sardini, Jr., V. Bhat, and B. M. Stoltz
- **Applications of Metal-Catalyzed Dynamic Kinetic Resolutions and Dynamic Kinetic Asymmetric Transformations for the Synthesis of Complex Molecules**
F. W. Goetzke, F. Modicom, and S. P. Fletcher
- **Dynamic Kinetic Resolution in Asymmetric Hydrogenation and Transfer Hydrogenation**
J.-H. Xie and Q.-L. Zhou
- **Dynamic Kinetic Resolution and Dynamic Kinetic Asymmetric Transformation of Atropisomers**
J. Berreur, B. S. L. Collins, and J. Clayden

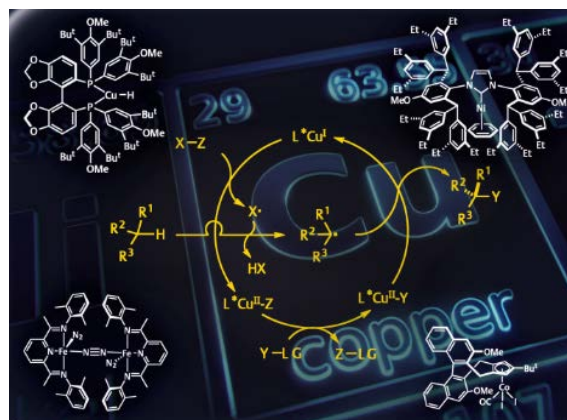
New: Base-Metal Catalysis

Catalysis with Earth-abundant metals, often referred to as base metals, is having a transformative impact on synthetic chemistry. Research in this area is driven not only by the common interest in the sustainability of chemical synthesis but also by the vast opportunity to discover and develop novel reaction chemistry that is not attainable with rare and precious metal catalysts. This work, edited by **Prof. Naohiko Yoshikai**, provides representative developments in base-metal catalysis, specifically catalysis with 3d-transition metals, in a format suitable for practitioners of organic synthesis.

Volume 1, which included in this release, is focused on recent advances in copper and nickel catalysis and contains reviews by some of the leading chemists in the field. Areas covered include Ullmann-type coupling, reductive coupling and cross-coupling reactions, C–H activation and functionalization, and alkene hydrofunctionalization and difunctionalization. Methods for the installation of important functional groups such as trifluoromethyl and carboxyl, and for the aerobic oxidation of alcohols are also covered.



Prof. N. Yoshikai



Reviews include: (titles are clickable links)

- **Modern Ullmann-Type Couplings**

J. Huang and D. Ma

- **Copper(I) Hydride Catalyzed Transformations**

T. Xiong and Y. Li

- **Copper-Catalyzed Alkene Difunctionalization**

S. R. Chemler and J. J. Kennedy-Ellis

- **Copper-Catalyzed C-H Functionalization via Radicals**

P. Chen and G. Liu

- **Copper-Catalyzed Directed C-H Functionalization**

H. Xu and H.-X. Dai

- **Copper-Catalyzed Acidic C-H Functionalization**

Y. Shang, Y. Ren, and W. Su

- **Copper-Catalyzed/Mediated Trifluoromethylation and other Fluoroalkylations**

Y. Ouyang, J.-Y. Shou, and F.-L. Qing

- **Copper-Catalyzed Aerobic Oxidation of Alcohols**

Y. Sasano and Y. Iwabuchi

- **Base-Metal-Catalyzed Carboxylation Using Carbon Dioxide**

T. Fujihara

- **Nickel-Catalyzed Cross-Electrophile Coupling Reactions**

X.-Z. Shu and X. Pang

- **Nickel-Catalyzed Enantioselective Reductive Cross-Coupling Reactions**

C. Wang and F. Yang

- **Nickel-Catalyzed Alkene Dicarbofunctionalization**

B. C. Lee, L. Lin, C. Ko, and M. J. Koh

- **Nickel-Catalyzed Cross Coupling Involving Alkenes**

S. Zhu

- **Nickel-Catalyzed Directed C-H Functionalization**

N. Chatani

- **Nickel-Catalyzed Nondirected C-H Functionalization**

Y. Nakao

- **Nickel-Catalyzed Bond Activation for Functional-Group Shuttling**

T. Delcaillau and B. Morandi

- **Nickel-Catalyzed Cross Coupling via C-O and C-N Activation**

T. Yoshida and M. Tobisu

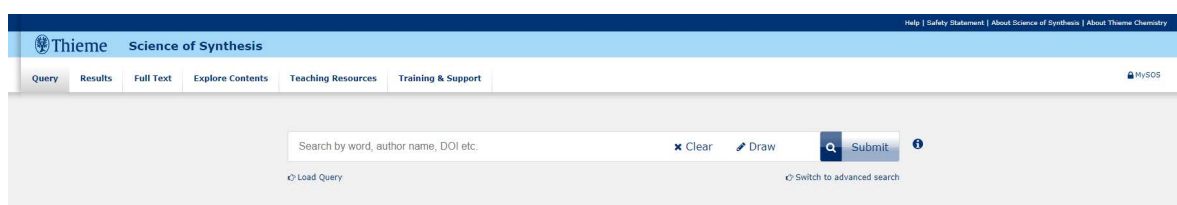
Early View Articles

Read selected new SOS reviews as soon as they have been edited.....no need to wait for a whole volume to be complete.

From now on, new SOS content will be released more often, allowing you earlier access to expert reviews of some of the most exciting and dynamic areas in organic chemistry.

Now available as **Early View**: (titles are clickable links)

- **Synthesis of Alkenes by Palladium-Catalyzed Cross-Coupling Reactions with Carbene Precursors**
K. Wang and J. Wang
- **Iron-Catalyzed Cross Coupling of Aryl and Vinyl Electrophiles**
R. Nolla-Saltiel and R. B. Bedford
- **Synthesis of Alkenes by α,β -Dehydrogenation**
X. Jie and W. Su



Explore Science of Synthesis


New! Early View Synthesis of Alkenes by Palladium-Catalyzed Cross-Coupling Reactions with Carbene Precursors Synthesis of Alkenes by α,β -Dehydrogenation Iron-Catalyzed Cross Coupling of Aryl and Vinyl Electrophiles	Functional Groups X-C≡X, X=C=X, X ₂ C=X, C ₂ X ₂ Compounds Nitriles, Isocyanides, and Derivatives Acid Halides, Carboxylic Acids, Esters, Anhydrides, Peroxy Acids Amides and Derivatives, Peptides, Lactams Thio-, Seleno-, and Tellurocarboxylic Acids, Imidic Acids, Ortho Acids Ketenes Ketene Acetals, Yne-X Compounds Aldehydes Ketones Heteroatom Analogues of Aldehydes and Ketones Quinones and Heteroatom Analogues Acetals: Hal/X and Q/O, S, Se, Te Acetals: O/N, S/S, S/N, and N/N and Higher Heteroatom Analogues Arene-X (X = Hal, O, S, Se, Te, N, P) X-Ene-X (X = F, Cl, Br, I, O, S, Se, Te, N, P), Ene-Hal, and Ene-O Compounds Ene-X Compounds (X = S, Se, Te, N, P) Fluoroalkanes Chloro-, Bromo-, and Iodoalkanes Alcohols Alkyl Ethers Peroxides	Heteroarenes Small-Ring Heterocycles, Monocyclic Five-Membered Heteroarenes with One Heteroatom Fused Five-Membered Heteroarenes with One Heteroatom Five-Membered Heteroarenes with One Chalcogen or One Additional Heteroatom Five-Membered Heteroarenes with Two Nitrogen or Phosphorus Atoms Five-Membered Heteroarenes with Three or More Heteroatoms Six-Membered Heteroarenes with One Chalcogen Six-Membered Heteroarenes with One Nitrogen or Phosphorus Atom Six-Membered Heteroarenes with Two Identical Heteroatoms Six-Membered Heteroarenes with Two Unlike or More Than Two Heteroatoms, Larger Hetero-Rings	Hydrocarbons Polynes, Arynes, Erynes, Alkynes Cumulenes, Allenes Arenes, Quasiallenes, Annulenes, Polyenes 1,3-Dienes Alkenes Alkanes
--	--	---	--

Content Alerts

To be informed every time new content is released, sign up for the *Science of Synthesis Alerts* [here!](#) You will then receive an email whenever new content is added to SOS

Science of Synthesis: Your expert guide to making molecules

Thieme Science of Synthesis

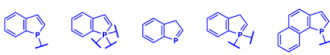


Dear SOS User,

We're happy to show you the newest content in Science of Synthesis.

Best regards,
Your Science of Synthesis Team

Benzotriphospholes
Author: R. A. Aikhen
Editor: J. A. Joule



[Read more](#)