# Syntnesis

**Reviews and Full Papers in Chemical Synthesis** 

August 15, 2024 • Vol. 56, 2445-2594



16

- C–C and C–X bond formation
- C–C and C–X bond cleavage
- Stereodefined olefins formation
- Annulation reactions
- Dearomatization reactions

Unveiling Novel Synthetic Pathways through Brook Rearrangement M. Agbaria, N. Egbaria, Z. Nairoukh





# **Synthesis**

## Reviews and Full Papers in Chemical Synthesis

2024 Vol. 56, No. 16 August II

Cover Design: © Thieme Cover Image: M. Agbaria et al.

#### Synthesis Recent Advances in the Multicomponent Synthesis of Heterocycles Review Using 5-Aminotetrazole Synthesis **2024**, 56, 2445–2461 DOI: 10.1055/s-0042-1751526 2445 R. Javahershenas\* H. Mei M. Koley V. A. Soloshonok A. Makarem\* Urmia University, Iran N-N University of Hamburg, N.N Germany NH Catalytic Asymmetric Synthesis of $\alpha$ -Mono and $\alpha$ , $\alpha$ -Disubstituted **Short Review Synthesis** 5- and 6-Membered $\alpha$ -Aza-lactams Synthesis 2024, 56, 2462–2482 2462 DOI: 10.1055/a-2270-0604 C. Palomo A. Landa\* -NH M. Oiarbide\* n = 1, 2 University of the Basque Country C, a ? . UPV/EHU, Spain C-H Functionalizati LG Substitution Amination Organocatalyst

Metal catalyst (Pd

Co, Ir, Rh)

Photocataly
 Enzymes

Rearrangement

Hydrogenation Deracemization



VI

#### Unveiling Novel Synthetic Pathways through Brook Rearrangement **Synthesis Short Review** Synthesis 2024, 56, 2483-2498 2483 DOI: 10.1055/a-2257-7304 Brook rearrangement ′\_M<sup>⊕</sup> o<sup>SiR3</sup> 0<sup>0</sup> M. Agbaria 0 N. Egbaria via . M⊕ Ð `ŚiRa R1 Z. Nairoukh\* The Hebrew University of Jerusa-Capabilities: lem, Israel - C-C and C-X bond formation Annulation reactions C–C and C–X bond cleavage Dearomatization reactions Stereodefined olefins formation

Syn <mark>thesis</mark>	Accessi	ng <i>meta-</i> Eno	ne-Substituted	Anisoles using /	$ArN_2BF_4$ as Precata-	Feature
Synthesis <b>2024</b> , 56, 2499–2506 DOI: 10.1055/a-2331-9439	iyst via	Rearrangem	ent of Alkyne-	l ethered Cyclone	exadienones	2499
A. Rai U. Das* CSIR-National Chemical Labora- tory, India		ArN <sub>2</sub> BF <sub>4</sub> (5 mol%) MeOH, 30 °C	$\bigcup_{R^1}^{OMe} \bigcap_{R^2} $ or	MeO R1		
			<ul> <li>Mild react</li> <li>Broad sco</li> </ul>	ion conditions ppe, 28 examples		
			• Up to 99%	5 yield		



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Syn <mark>thesis</mark>	Ketyl Radical Enabl	ed Synthesis of Oxetan	es		Paper
Synthesis <b>2024</b> , 56, 2513–2520 DOI: 10.1055/s-0043-1774907	Synthetic Challenge: Acc	ess to Oxetanes from Unactivated	Carbonyls and Alken	es	2513
M. R. Gatazka S. G. Parikh K. A. Rykaczewski C. S. Schindler* University of Michigan, USA			OAC E		
	Acetyl lodide Activation of Carbonyls to α-Oxy Iodides	Ketyl Radical Intermediate	One Pot Protocol	Trifunctionalized Oxetanes	



Synthesis **2024**, 56, 2521–2528 DOI: 10.1055/a-2323-0721

B. Gopal P. R. Singh S. Bhatt A. Goswami\*

Indian Institute of Technology Ropar, India

BF <sub>3</sub> ·OEt <sub>2</sub> -Mediated (3+2) Cycloadditic	on Reactions	of Donor-Acceptor	
Cyclopropanes (DACs) with Cyanamic	des: Access t	o Cyclic Amidines	
$Ar \xrightarrow{CO_2R}_{CO_2R} + \begin{pmatrix} R^i \\ NC^N R^2 \end{pmatrix} \xrightarrow{BF_3 \cdot OEt_2 (3 \text{ equiv})}_{DCE, 60 \circ C, 6 \text{ h}}$	$Ar \xrightarrow{CO_2R}_{N=\binom{N-R^2}{2}}$		

Up to 85%

Syn <mark>thesis</mark>	Metal-Free Synthe	sis of Selanyl-Substituted Chromenones via	Paper
Synthesis <b>2024</b> , 56, 2529–2536	Selanylation/Cycliz	zation of Alkynyl Aryl Ketones	2529
DOI: 10.1055/s-0043-1775369			
XR. Gong YH. Zhou ML. Ren	R <sup>2</sup> M <sup>2</sup> OMe R <sup>1</sup> + Ts=S	$eR^3 \xrightarrow{MeCN} R^2 \xrightarrow{\Pi} O SeR^3$	
V V Chan*		25 examples, up to 82% yield	
YL. Xu*	Transition-metal-free	Good functional group tolerance	
Guilin Medical University, P. R. of China	Oxidant-free	Broad substrate scope	

Gram-Scale Synthesis
 Mild Reaction Conditions

Metal/Additive-Free Protocol
 Description Broad Functional Group Tolerance

2521



VIII

### Syn thesis



- S. Bernhard
- N. Kümmerer
- D. Urgast
- F. Hack
- J. Ungelenk
- A. Frank
- D. Schollmeyer
- U. Nubbemeyer\*



2537



#### Syn thesis

Synthesis **2024**, 56, 2549–2557 DOI: 10.1055/s-0043-1775368

D. V. Demchuk O. I. Adaeva D. V. Tsyganov D. I. Nasyrova R. A. Dolotov E. A. Muravsky A. E. Varakutin A. V. Samet V. V. Semenov\*

N. D. Zelinsky Institute of Organic Chemistry RAS, Russian Federation Synthesis of Methoxy Analogues of Coenzyme Q10 Metabolites from<br/>Parsley Seed Extracts via Baeyer–Villiger Rearrangement of Carbonyl-<br/>Substituted PolyalkoxybenzenesPaper2549





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Johannes Gutenberg-Universität Mainz, Germany

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#### Synthesis

Synthesis **2024**, 56, 2565–2571 DOI: 10.1055/a-2315-1934

Q. Huang C. Wan\* J.-P. Wan\* Jiangxi Normal University, P. R. of China

#### Photocatalytic Annulation of Enaminones with Thioureas for the Synthesis of 2-Aminothiazoles via Tandem C–S and C–N Bond Formation

2565

Paper

2572



Up to 99% yield

vn	ne	S	
- y			-

*Synthesis* **2024**, 56, 2572–2580 DOI: 10.1055/a-2309-1501

#### K.-M. Wen X.-H. Chang\* C. Guo\*

University of Science and Technology of China, P. R. of China Anhui Agricultural University, P. R. of China

23 example:



Wide substrate scope

Mild reaction conditio



Synthesis **2024**, 56, 2581–2587 DOI: 10.1055/a-2317-6659

A. D. Sokolova A. Y. Belyy R. F. Salikov\* D. N. Platonov Y. V. Tomilov\*

N. D. Zelinsky Institute of Organic Chemistry, Russian Federation





#### Syn<mark>thesis</mark>

Synthesis **2024**, 56, 2588–2594 DOI: 10.1055/a-2329-4214

#### J. C. Morales-Solís M. Ordoñez\*

J. L. Viveros-Ceballos Universidad Autónoma del Estado de Morelos, Mexico Stereodivergent Synthesis of the Four Stereoisomers of Diethyl 4-Hydroxyphosphopipecolate from Ethyl (*R*)-4-Cyano-3-hydroxybutanoate

Х

Paper 2588

