ORGANIC CHEMISTRY

FRONTIERS

rsc.li/frontiers-organic

IN THIS ISSUE

ISSN 2052-4129 CODEN OCFRA8 10(19) 4721-5030 (2023)

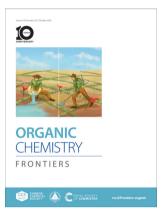


Cover

See Maïwenn Jacolot, Pierre-Adrien Payard, Florence Popowycz *et al.*, pp. 4732–4739.

Image reproduced by permission of Adrien Demingeon from *Org. Chem. Front.*, 2023, **10**, 4732.

This cover, sponsored by INSA Lyon, was designed by the Lyon artist Adrien Demingeon (https://www.instagram.com/Taken0w).



Inside cover

See Xiao-Xiao Huang, Shao-Jiang Song *et al.*, pp. 4740–4749.

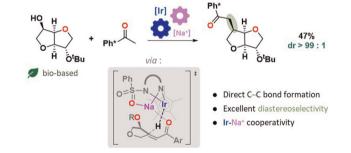
Image reproduced by permission of Shuhui Dong from *Org. Chem. Front.*, 2023, **10**, 4740.

RESEARCH ARTICLES

4732

Ir-Na cooperativity controls the diastereoselectivity of borrowing hydrogen C-C alkylation on isosorbide: synthesis methodology and mechanistic investigation

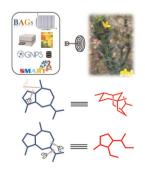
Jordan François, Jordan Rio, Erwann Jeanneau, Marie-Ève L. Perrin, Maïwenn Jacolot,* Pierre-Adrien Payard* and Florence Popowycz*



4740

Rapid screening of unprecedented sesquiterpenes with distinctive ring skeletons from *Daphne* aurantiaca employing an integrated strategy

Shu-Hui Dong, Jin-Ling Han, Xin-Yu Chang, Mei-Ya Lian, Xin Zhang, Xiao-Ling Liu, Ming Bai, Xiao-Xiao Huang* and Shao-Jiang Song*



EDITORIAL STAFF

Executive Editor

Wenjun Liu

Deputy Editor

Kailin Deng

Development Editor

Cheng Du

Editorial Production Manager

Helen Saxton

Senior Publishing Editor

Becky Webb

Publishing Editors

Kirstine Anderson, Matthew Bown, Laura Cooper, Hannah Fielding, Clare Fitzgerald, Anoushka Handa, Claire Harding, Alan Holder, Charlie Palmer, Rosie Rothwell, Donna Smith, Laura Smith

Assistant Editors Jie Gao, Yu Zhang

Publisher

Jeanne Andres

For queries about submitted papers, please contact Helen Saxton, Editorial Production Manager, in the first instance. E-mail: OrgChemFrontiersPROD@rsc.org

For pre-submission queries please contact Wenjun Liu,

Executive Editor. Email: OrgChemFrontiersED@rsc.org

Organic Chemistry Frontiers (electronic: ISSN 2052-4129) is published 24 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WE.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to RSC Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 OWF, UK Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2,182; USS3,492. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

ORGANIC CHEMISTRY

FRONTIERS

An international, high impact journal for cutting-edge researches from all disciplines of organic chemistry.





rsc.li/frontiers-organic

Published in collaboration with the Chinese Chemical Society and Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences

Editorial Board

Editor-in-Chief

Shengming Ma, Shanghai Institute of Organic Chemistry, China

Associate Editors

Arjan W. Kleij, Institute of Chemical Research of Catalonia, Spain Chulbom Lee, Seoul National University, Korea

Bill Morandi, ETH Zurich, Switzerland

Jennifer M. Schomaker, University of Gu Wisconsin-Madison, USA Sa

Frank Würthner, University of Würzburg, Germany

Pei-Qiang Huang, Xiamen University, China Qian Zhang, Northeast Normal University, China

Members

Guy Bertrand, University of California, San Diego, USA Nicolai Cramer, EPFL, Switzerland Louis Fensterbank, Sorbonne Université,

Lichang Wang, Southern Illinois University, USA

Dan Yang, Westlake University, China

Advisory Board

Ayyappanpillai Ajayaghosh, National Institute for Interdisciplinary Science and Technology, India

Lutz Ackermann, Georg-August-Universitat Gottingen, Germany

Marco Bandini, University of Bologna, Italy Matthias Beller, University of Rostock, Germany

Akkattu T. Biju, Indian Institute of Science, India

Xi Chen, University of California-Davis, USA Yiyun Chen, Shanghai Institute of Organic Chemistry, China Yonggui Robin Chi, Nanyang Technological

University, Singapore Stuart Conway, University of Oxford, UK Shuanhu Gao, East China Normal University, China

Véronique Gouverneur, University of Oxford,

Frank Glorius, Westfälische Wilhelms-Universität Münster, Germany Zhenhua Gu, University of Science and Technology of China, China Masayuki Inoue, The University of Tokyo, Japan

Guochen Jia, Hong Kong University of Science & Technology, China Michael Kerr, University of Western Ontario, Canada

Ohyun Kwon, University of California, Los Angeles, USA Rai-Shung Liu, National Tsing Hua

University, Hsinchu Sanzhong Luo, Tsinghua University, China Cristina Nevado, University of Zurich, Switzerland

Christoph Schalley, Freie Universität Berlin, Germany Daniel Seidel, University of Florida, USA Feng Shi, Jiangsu Normal University, China Yian Shi, Colorado State University, USA Vinod K. Singh, IIT Kanpur, India Wenjun Tang, Shanghai Institute of Organic Chemistry, China

Yong Tang, Shanghai Institute of Organic Chemistry, China

Chen-Ho Tung, Technical Institute of Physics and Chemistry, CAS, China Tao Ye, Peking University (Shenzhen), China Tomoki Ogoshi, Kanazawa University, Japan Zhaohui Wang, Tsinghua University, China Lizhu Wu, Technical Institute of Physics and Chemistry, CAS, China

Xingang Zhang, Shanghai Institute of Organic Chemistry, China

Information for Authors

Full details on how to submit material for publication in Organic Chemistry Frontiers are given in the Instructions for Authors (available from http://www.rsc.org/authors). Submissions should be made via the journal's homepage: rsc.li/frontiers-organic

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication

This journal is © the Partner Organisations 2023.

the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890



4750

Sodiated Oppolzer enolates: solution structures, mechanism of alkylation, and origin of stereoselectivity

Nathan M. Lui and David B. Collum*

$$\begin{array}{c} \text{Me} & \text{Me} & \text{Me} & \text{Me} & \text{Me} \\ & S = 0 & \text{NaS}_m & \text{Me} & \text{Me} \\ & S = 0 & \text{NaS}_m & \text{Me} \\ & S = 0 & \text{Me} & \text{Me} \\ & S = 0 & \text{Ph} \\ & S = 0 & \text{E}^{\dagger} \end{array}$$

4758

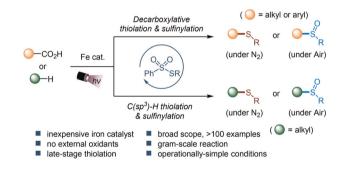
Photoinduced desaturative β -C(sp³)-H amidation of N-phenylpiperidine with phthalimide driven by electron donor-acceptor complexes

Bin Sun, Yu Jiang, Pan-Yi Huang, Pei-Xuan Li, Chun Lv, Yan Xu, Jia-Yang Wang and Can Jin*

4764

An iron-catalyzed C-S bond-forming reaction of carboxylic acids and hydrocarbons via photo-induced ligand to metal charge transfer

Ao-Men Hu, Jia-Lin Tu, Menggi Luo, Chao Yang, Lin Guo* and Wujiong Xia*



4774

N-Heterocyclic carbene catalyzed synthesis of benzotrifluorides from enals and **β-trifluoromethylenones**

Bang-An Zhou, Chun-Lin Zhang* and Song Ye*

4779

Visible light-driven direct access to iminecontaining azaarene-substituted highly functionalized pyrroles

Shuai Yao, Xiaowei Zhao, Xu Ban, Tianju Shao, Yanli Yin, Weigao Hu* and Zhiyong Jiang*

4786

- ▶ wide scope of allenes (R = prim-, sec- and tert-alkyl groups, and heteroatoms)
- ▶ three-component coupling reaction → high chemo-, regio-, and stereoselectivities
- ► formal synthesis of natural product ► stereospecific derivatizations

Synthesis of (Z)-alkenyl boronates via a copper(i)-catalyzed linear-selective alkylboration of terminal allenes

Yu Ozawa, Yuma Shiratori, Hisao Koriyama, Kohei Endo, Hiroaki lwamoto and Hajime Ito*

4794

four-component strategy tertiary amines as C2 unit

readily available starting materials ammonium salt as nitrogen source

Modular synthesis of unsymmetric 2,4-diarylsubstituted pyridines through a four-component cyclization strategy under metal-free conditions

Yanfeng Ma, Tianci Xu, Fuhong Xiao,* Guojiang Mao and Guo-Jun Deng*

4800



Sustainable photocatalytic C-H annulation of heteroarenes with sulfoxonium ylides: synthesis and photophysical properties of fused imidazo[1,2-a]pyridine-based molecules

Sravani Sana, Srinivas Reddy Dannarm, Ramya Tokala, Sowmya Dastari, Manda Sathish, Rahul Kumar, Rajesh Sonti and Nagula Shankaraiah*

4809

Copper-catalyzed functionalization/transformation of styrenes with polyhaloalkanes and arenes enables the synthesis of heteroarene-containing gem-dihaloalkenes

Yi-Lin Zhao, Yong Yao, Wan-Ting Li, Jing-Hao Qin, Qing Sun, Jin-Heng Li* and Xuan-Hui Ouyang*

4816

A photochemical halogen-atom-transfer pathway for the carboxylation of alkenes with CO₂

Senmao Zhai, Rong Wang, Quan Dong, Jiajia Cheng, Meifang Zheng* and Xinchen Wang*

4821

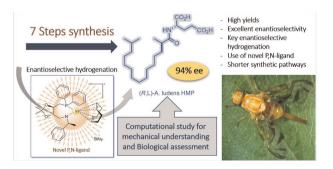
A copper-catalyzed direct C(sp²)-H alkylsulfonylation of alkenes using alkylsilyl peroxides and DABCO·(SO₂)₂

Xueni Tian, Lingling Chen, Tonghao Zhu* and Jie Wu*

4827

New synthetic pathways to the Anastrepha ludens host marking pheromone: harnessing iridiumcatalysis with novel P,N-ligand for enantioselective construction

Tushar Janardan Pawar, Liliette Barcelona-Cazanave, Israel Bonilla-Landa, Magdalena Escobar, J. Oscar C. Jimenez-Halla, Alma Altúzar-Molina, Patricia Romero-Arellano, Andrew J. F. Edmunds, Martín Aluja and José Luis Olivares-Romero*



4836

on no metal waste excellent stereoselectivity high functional-group tolerance

Metal-free photocatalyzed allylic silylation of allyl acetates and chlorides

Xin-Long Yu, Jia-Wei Hu, Jian Cao* and Li-Wen Xu*

4843

- Unprecedented dual C_{sp}²-H functionalization
- O Cyclization between two functional groups
- O Four bonds formation of 1 C-C, 1 C-O, 2 C-N Simple operation and accessible substrates

 I_2 -DMSO mediated dual α,β -C(sp²)-H functionalization/bicyclization of o-hydroxyphenyl enaminones to construct C2,C3-disubstituted chromone derivatives: chromeno[2,3-b]pyrrol-4(1H)-ones

Shuang-Gui Lei, You Zhou, Li-Sheng Wang, Zhi-Cheng Yu, Ting Chen, Yan-Dong Wu, Meng Gao* and An-Xin Wu*

4848

- two adjacent tetrasubstituted carbon stereocenters
 good chemoselectivity, high enantioselectivity with excellent diastereoselectivity
- easy operation and transition-metal free

Enantioselective construction of spirodihydrofuran oxindoles via one-pot organo-/iodine sequential catalysis

Ai-Bao Xia,* Li-Sha Huang, Chang-Ping Li, Qing-Bo Hu, Jin-Yao Zhu, Liang Bai and Dan-Qian Xu*

4854 OC₈H₁₇ Regioselective Polymerization D-Enantiomer Fast Polymerization OC8H17 Low 2,3-selective (74.6%) trans-Ni(II)/LR-

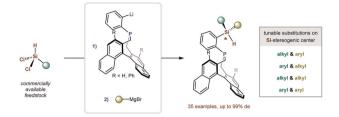
Reversibly photoswitchable catalysts for high regioselectivity and enantioselectivity in polymerization of allenes

Li Zhou, Yong-Jie Wu, Kun Chen, Xing-Yu Zhou, Hui Zou, Shu-Ming Kang, Na Liu* and Zong-Quan Wu*

4862

Stereodivergent asymmetric synthesis of P-atropisomeric Si-stereogenic monohydrosilanes

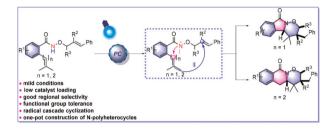
Bo Yang, Xingfa Tan, Yicong Ge, Yingzi Li and Chuan He*



4871

Intramolecular cascade cyclization via photogenerated N-amidyl radicals toward isoindolin-1-one/3,4-dihydroisoguinolin-1(2H)-one fused oxazinane

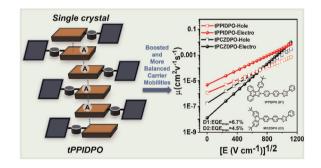
Yuan-Xiang He, Kui Hu, Yu Ran, Zhen-Yao Lei, Shu Geng, Li-Na Chen, Li Pan,* Jun-Bo Zhong* and Feng Huang*



4878

An efficient blue electro-fluorescence material with high electron and balanced carrier mobilities based on effective π -stacking between acceptors

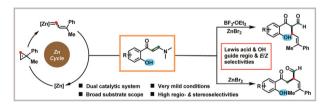
Mizhen Sun, Chenglin Ma, Mingliang Xie, Lizhi Chu, Xin Wang, Qikun Sun, Wenjun Yang and Shanfeng Xue*



4887

Stereoselective synthesis of 1,3- and 1,4dicarbonyl-alkenes from cyclopropenes in a catalytic zinc system

Jiabin Han, Yu Liu, Xiaoyan Yang, Xuheng Zhang, Yuanhao Zhu, Min Zhao, Gefei Hao* and Yaojia Jiang*



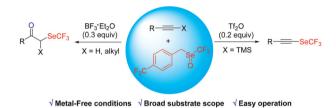
4895

- Catalytic oxidation-reduction condensation
- Compatible with all proteinogenic amino acids
- Applicable to SPPS
- Scalable continuous-flow process

A practical approach for oligopeptide synthesis via synergistic photoredox, cobaloxime and organophosphorus triple catalysis

Junqi Su, Jia-Nan Mo, Guofeng Zhang, Ziyu Jiang and Jiannan Zhao*

4905



Metal-free Lewis-acid-catalyzed divergent trifluoromethylselenolation of alkynes: construction of α -trifluoromethylselenolated ketones and alkynes

Yan Gao, Rui Xiao, Bingbing Feng, Zhiyi Bian, Han Zhang, Gangguo Zhu, Yanan Wang* and Zheliang Yuan*

4912



6-Exo-dig cyclization/dearomatization cascade towards N-O fused spiro polyheterocycles

Zhenwei Lv, Yan Li, Erik V. Van der Eycken,* Lingchao Cai* and Liangliang Song*

4918



Photo-induced stereo- and regiospecific sulfonylation of C-C multiple bonds exploiting the dual reactivity of sulfonium iodate(i) species

Aakanksha Gurawa, Nitin Kumar and Sudhir Kashyap*

4927

Catalyst-controlled and visible light-induced acylmethylation and bromoacylmethylation of Morita-Baylis-Hillman acetates with α -bromo ketones: access to highly functionalized 1,5-dicarbonyl compounds

De-Run Zhang, Lin-Ping Hu, Feng-Lin Liu, Xiao-Hong Huang, Xia Li, Bo Liu, Ming-Yu Teng and Guo-Li Huana*

- \checkmark Catalyst-controlled and photoinduced \checkmark High functional-group tolerance
- \checkmark Exclusive chemo- and regio-selectivities \checkmark Large-scale synthesis
- √ Broad substrate scope √ Mild reaction conditions

4935

Copper-catalyzed asymmetric propargylation of imines enabled by a biphenol-based phosphoramidite ligand

Qi-Qi Yan, Cheng-Kai Ruan, Yu-Qin Deng, Yu-Chuan Pu, Wen-Dao Chu, Cheng-Yu He* and Quan-Zhong Liu*

Cheap and easy-handled Cu(OAc)2 catalyst

novel and simple phosphoramidite ligand with atropoisomerically flexible biphenol skeleton

REVIEWS

4941

Strained cycloalkanols in C-C bond formation reactions: a boon in disquise!

Neha Jha, Pragya Mishra and Manmohan Kapur*

4972

Recent advances in the dichalcogenation reactions of unsaturated compounds via double functionalization

Chang-Sheng Wang, Yuan Xu, Yi-Liang Zhou, Chun-Ling Zheng, Guowei Wang and Qiao Sun*

