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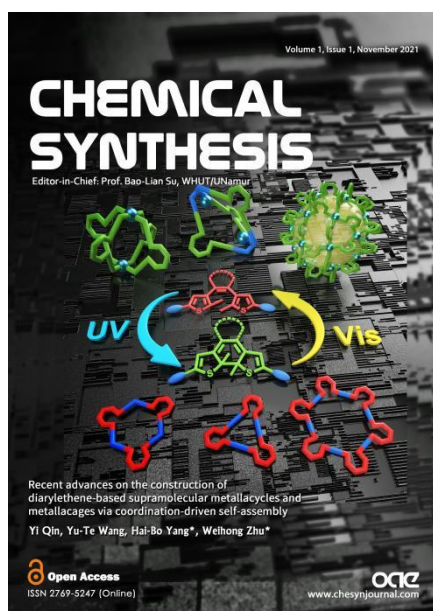
Here is a collection of published articles in *Chemical Synthesis (CS)* in 2021, including titles, authors, links to full paper and PDF, and citation. Abstracts and keywords are also included for those contain these parts.

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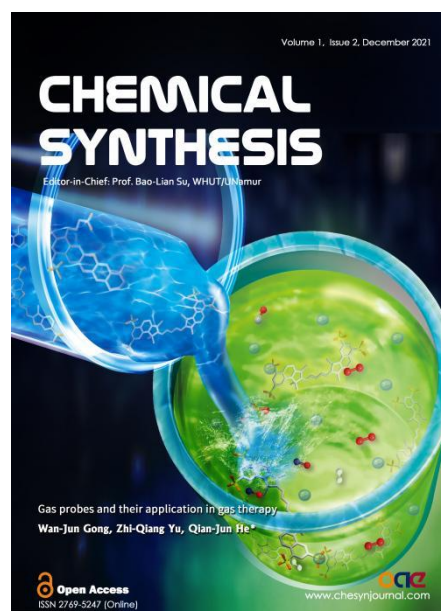
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Chemical Synthesis

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Volume 1, Issue 1



Volume 1, Issue 2

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Editorial

1. New journal: *Chemical Synthesis*

Bao-Lian Su*

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Cite this article

Su BL. New journal: *Chemical Synthesis*. *Chem Synth* 2021;1:1. <http://dx.doi.org/10.20517/cs.2021.01>

Editor's Choice

1. Smart materials

Bao-Lian Su*

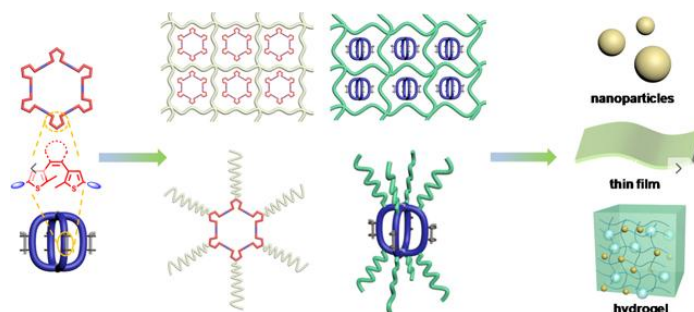
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Cite this article

Su BL. Smart materials. *Chem Synth* 2021;1:4. <http://dx.doi.org/10.20517/cs.2021.10>

Perspective

1. Future prospects in boron chemistry: new boron compounds and Lewis acids for catalysis and materials science

Guillaume Berionni*

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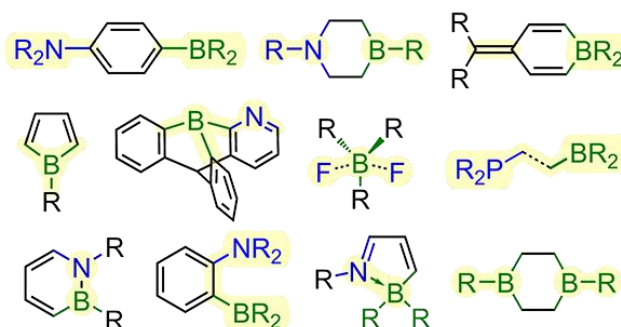
Abstract

Boron-containing compounds have a wide range of structures and rich and multifaceted reactivity patterns. As a result, these compounds are being increasingly used in organometallic, supramolecular, organic and inorganic chemistry, as well as in catalysis and materials science. This perspective describes recent ground-breaking studies and their implications for the future development of new catalysts and materials containing one or several trivalent boron atoms.

Keywords

Boron chemistry, organoboron compounds, boron Lewis acids, boron materials, boronic acid derivatives, organoboranes

Graphical Abstract



Cite this article

Berionni G. Future prospects in boron chemistry: new boron compounds and Lewis acids for catalysis and materials science. *Chem Synth* 2021;1:10. <http://dx.doi.org/10.20517/cs.2021.11>

Research Highlight

1. Sterol biosynthesis: 2,3-oxidosqualene analogues

Hisashi Yamamoto*

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Cite this article

Yamamoto H. Sterol biosynthesis: 2,3-oxidosqualene analogues. *Chem Synth* 2021;1:7.
<http://dx.doi.org/10.20517/cs.2021.12>

Preview

1. Recent advances in radical phosphorylation

Yuan Niu, Shang-Dong Yang*

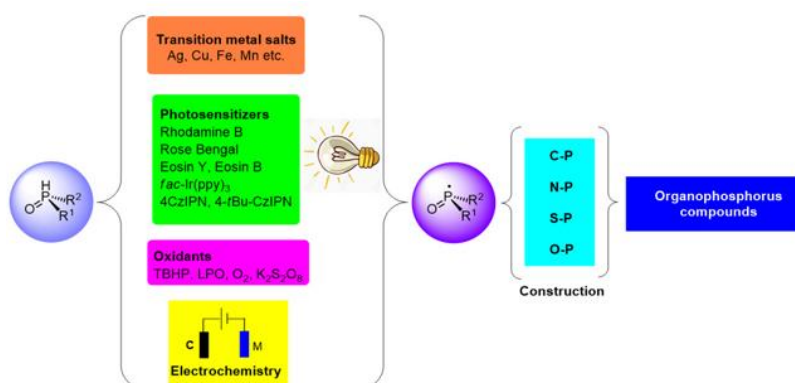
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Niu Y, Yang SD. Recent advances in radical phosphorylation. *Chem Synth* 2021;1:12.
<http://dx.doi.org/10.20517/cs.2021.14>

2. Fluorescent probes for therapeutic gas

Jong Seung Kim*

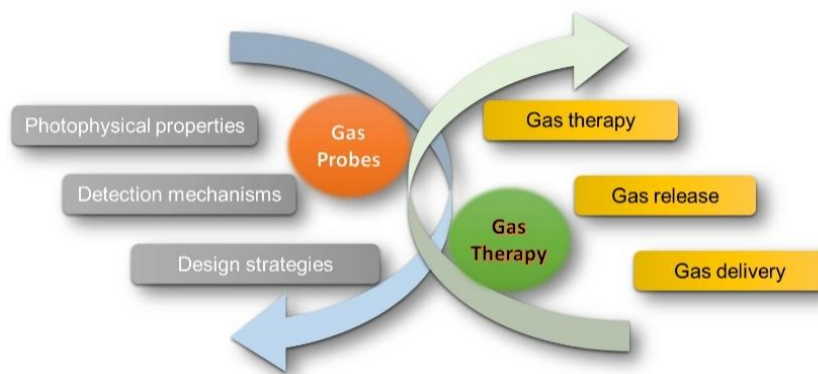
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Kim JS. Fluorescent probes for therapeutic gas. *Chem Synth* 2021;1:5. <http://dx.doi.org/10.20517/cs.2021.08>

Commentary

1. The “fittest sterol” - origin mysteries still fascinate

Karl Barry Sharpless*

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Cite this article

Sharpless KB. The “fittest sterol” - origin mysteries still fascinate. *Chem Synth* 2021;1:8. <http://dx.doi.org/10.20517/cs.2021.13>

Research Article

1. Schizophrenic behavior of 2,3-oxidosqualene sterol cyclase from pig liver towards 2,3-oxidosqualene analogs

Alain Krief*, Romuald Sable, Alain Ronvaux, Willy Dumont, Pat Sandra, Frank David*

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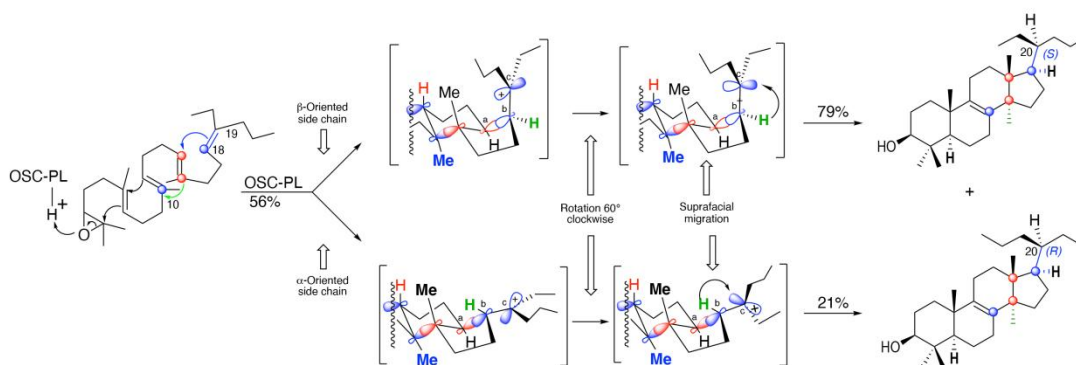
Abstract

We report the unusual behavior of oxidosqualene sterol cyclase from pig liver towards 2,3-oxidosqualene analogs bearing two alkyl groups different from a methyl, at their Δ^{18-19} double bond: unambiguous structure determinations of the products and tentative rational for their formation are described.

Keywords

Biosynthesis, multistep hemi-synthesis of natural product analogs, performance liquid chromatography, structure determination

Graphical Abstract



Cite this article

Krief A, Sable R, Ronvaux A, Dumont W, Sandra P, David F. Schizophrenic behavior of 2,3-oxidosqualene sterol cyclase from pig liver towards 2,3-oxidosqualene analogs. *Chem Synth* 2021;1:6. <http://dx.doi.org/10.20517/cs.2021.03>

Review

1. Advances in radical phosphorylation from 2016 to 2021

Jie Liu, Han-Zhi Xiao, Qiang Fu*, Da-Gang Yu*

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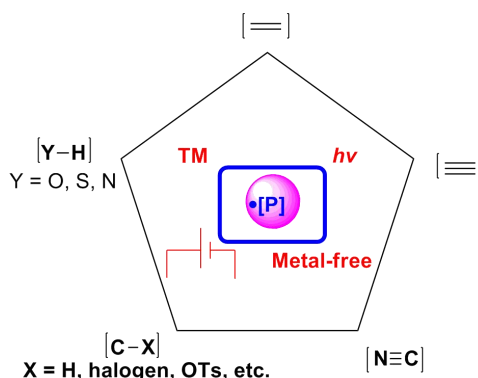
Abstract

Organophosphorus compounds are of great significance in organic chemistry. Therefore, the construction of phosphorus-containing compounds has attracted significant attention from organic chemists. Radical phosphorylation has become a powerful strategy for building organophosphorus compounds and numerous achievements have been realized in recent years. In this review, we summarize the development of the generation and application of phosphorus radicals in organic chemistry since 2016. Special emphasis is given to various new transformations involving the generation of P-centered radicals via transition metal catalytic, photochemical and electrochemical means. Recent advances in the development of metal-free catalytic phosphorylations involving P-centered radicals are also reviewed.

Keywords

Organophosphorus compounds, phosphorus radicals, transition metal catalysis, visible-light photoredox catalysis, unsaturated compounds

Graphical Abstract



Cite this article

Liu J, Xiao HZ, Fu Q, Yu DG. Advances in radical phosphorylation from 2016 to 2021. *Chem Synth* 2021;1:9.
<http://dx.doi.org/10.20517/cs.2021.07>

2. Recent advances on the construction of diarylethene-based supramolecular metallacycles and metallacages via coordination-driven self-assembly

Yi Qin, Yu-Te Wang, Hai-Bo Yang*, Weihong Zhu*

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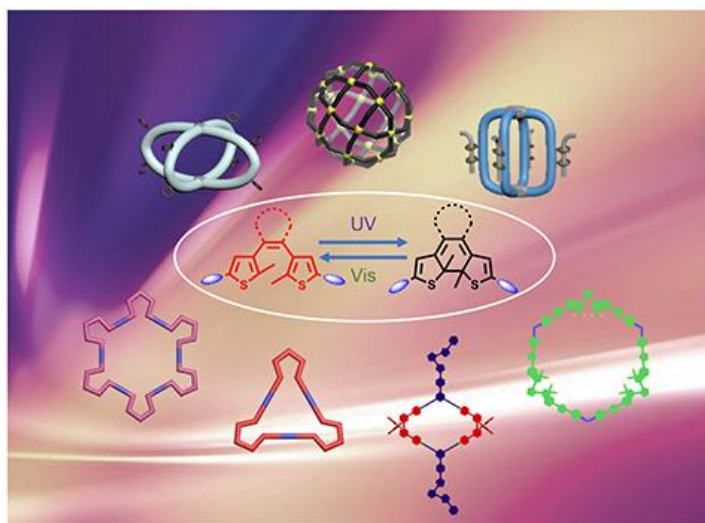
Abstract

During the past few years, the construction of diarylethene (DAE)-based supramolecular metallacycles and metallacages has gained increasing attention due to their distinctive photophysical and photochemical properties and potential applications in magnetic switching, smart soft materials, photodynamic therapy, *etc.* Surprisingly, no review on the construction of discrete DAE-based supramolecular metallacycles and metallacages via coordination-driven self-assembly has been summarized to the best of our knowledge. Considering the rapid development of this field, it is time to summarize the recent development of the construction of discrete DAE-containing polygons and polyhedra. In this review, the construction of diarylethene-based metallacycles and metallacages via coordination-driven self-assembly is briefly introduced. In addition, the properties and applications of these metallacycles and metallacages are also discussed.

Keywords

Diarylethene, metallacycles and metallacages, coordination-driven self-assembly, photochromism

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Cite this article

Qin Y, Wang YT, Yang HB, Zhu W. Recent advances on the construction of diarylethene-based supramolecular metallacycles and metallacages via coordination-driven self-assembly. *Chem Synth* 2021;1:2.

<http://dx.doi.org/10.20517/cs.2021.05>

3. A versatile messenger for chirality communication: asymmetric silica framework

Xinling Liu*, Ren-Hua Jin*

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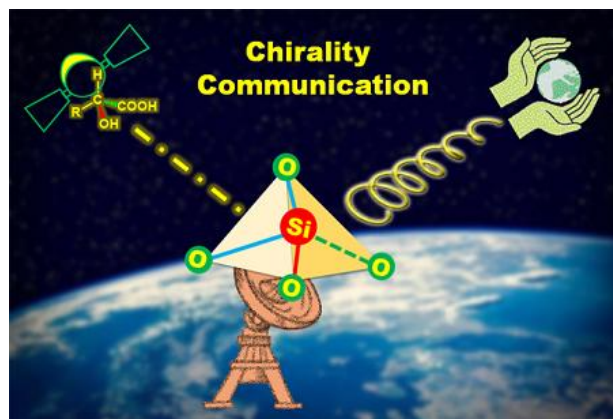
Abstract

Asymmetric tetrahedral carbon is the basic structural unit of many organic compounds in life and its molecular chirality plays a key role in regulating biological functions. Silica (SiO_2) is highly earth abundant and its basic unit is also the tetrahedral form of SiO_4 . However, much less attention has been paid to the molecular-scale chirality of SiO_2 frameworks with repeating SiO_4 units because it is challenging to enantioselectively control the molecular structures of SiO_2 . Research into the chiral molecular structures of SiO_2 deserves to be a significant topic for understanding widespread chiral phenomena and for exploring the chiral properties hidden in inorganic matter. This review highlights the asymmetric synthesis strategies that endow SiO_2 with chirality transferred from asymmetric carbon at the molecular scale. The chirality transfer ability of SiO_2 is also demonstrated for the construction of various inorganic and/or organic chiral materials with a wide range of applications in asymmetric synthesis, circularly polarized luminescence and Raman scattering-based chiral recognition.

Keywords

Chiral silica, asymmetric SiO_4 tetrahedra, chirality transfer, circularly polarized luminescence, enantioselective Raman scattering

Graphical Abstract



Cite this article

Liu X, Jin RH. A versatile messenger for chirality communication: asymmetric silica framework. *Chem Synth* 2021;1:14.
<http://dx.doi.org/10.20517/cs.2021.16>

4. Gas probes and their application in gas therapy

Wan-Jun Gong, Zhi-Qiang Yu, Qian-Jun He*

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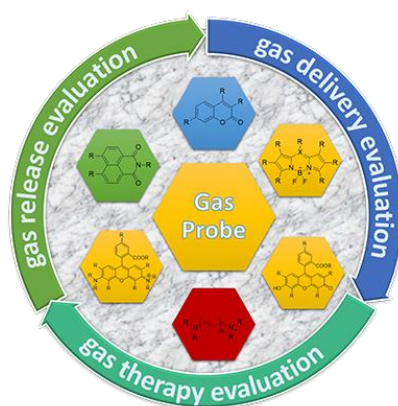
Abstract

As an emerging field, gas therapy attracts increasing attention because of its distinguishing features in disease treatment. However, to achieve a therapeutic effect, the concentration of gas should be carefully controlled. Thus, a suitable and convenient technology is required to monitor the gas concentration *in vivo*. Besides, the transportation of gas into human body and *in vivo* biodistribution of gas also need to be evaluated. Among the technologies adopted in gas therapy, fluorescence imaging technology is the first choice due to its high specificity, high sensitivity, and non-invasion. And as the core of fluorescence imaging, the properties of fluorescent dyes directly determine the quality of imaging. So, it is critical to choose suitable gas probes for different purposes. Here, we review common gas detection methods, including a brief introduction of fluorescence, the distinctive properties of five fluorophore cores, and the detection mechanisms of common gas probes. Then, the applications of gas probes in gas delivery, gas release, and gas therapy are summarized. At last, we discuss the potential of developing further intelligent gas probes and fluorescence imaging technologies for gas therapy.

Keywords

Gas therapy, fluorescence imaging, bioprobe, gas detection, gas delivery

Graphical Abstract



Cite this article

Gong WJ, Yu ZQ, He QJ. Gas probes and their application in gas therapy. *Chem Synth* 2021;1:3.
<http://dx.doi.org/10.20517/cs.2021.04>

News

1. Congratulations to the 11 new academicians of the Chemistry Division, Chinese Academy of Sciences

Miao Zhang*

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Cite this article

Zhang M. Congratulations to the 11 new academicians of the Chemistry Division, Chinese Academy of Sciences. *Chem Synth* 2021;1:13. <http://dx.doi.org/10.20517/cs.2021.18>

2. Congratulations to the Academician Xin-He Bao's team and the Academician Dong-Yuan Zhao's team for winning the first prizes of the State Natural Science Award of China

Miao Zhang*

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Zhang M. Congratulations to the Academician Xin-He Bao's team and the Academician Dong-Yuan Zhao's team for winning the first prizes of the State Natural Science Award of China. *Chem Synth* 2021;1:11. <http://dx.doi.org/10.20517/cs.2021.17>