



## メタルフリー炭素触媒

設計と応用・全2巻

# 1. Carbon-Based Metal-Free Catalysts

Design and Applications

Edited by LIMING DAI

2018年8月出版予定 全2巻/760ページ D26050  
¥45,800

Hardcover (Wiley-VCH) ISBN 9783527343416

### 本書の内容

高価な金属ベース触媒にかわる新たな触媒として期待されているカーボンベース触媒

Offering comprehensive coverage of this hot topic, this two-volume handbook and ready reference treats a wide range of important aspects, from synthesis and properties of carbon nanomaterials to their applications as metal-free catalysts in important industrial processes. Following a look at the development of various important graphitic carbon materials and carbon-based catalyst supports, subsequent sections deal with a mechanistic understanding for the molecular design of efficient carbon-based metal-free catalysts, with a special emphasis on heteroatom-doped carbon nanotubes, graphene and graphite along with recent advances in the development of carbon-based metal-free catalysts. Examples of important industrial processes covered include clean energy conversion and storage, environmental protection, and synthetic chemistry. The book is rounded off by a summary of the current challenges and future opportunities in this exciting field. With contributions from world-leading scientists, this is an indispensable source of information for academic and industrial researchers in catalysis, green chemistry, materials science, nanotechnology, energy technology and chemical engineering, as well as graduates and scientists entering the field.

### 本書の目次

**PART I. CARBON MATERIALS (Graphitic and Amorphous Carbon, Carbon Nanotubes, Graphene, Graphitic Carbon Nitride, Heteroatom-Doped Carbon Materials)**

**PART II. CARBON-BASED CATALYST SUPPORTS**

Metal-Based Catalysts vs. Metal-Free Catalysts

Metal-Based Catalysts Supported by Carbon Materials

Metal-Based Catalysts Supported by Heteroatom-Doped Carbon Materials

**PART III. CARBON-BASED METAL-FREE CATALYSTS**

Electrocatalysis (ORR, OER, HER)

Electrocatalysis of CO<sub>2</sub> Reduction

Electrocatalysis of I<sup>-</sup>/I<sub>3</sub><sup>-</sup> or Co(bpy)<sub>3</sub><sup>2+</sup>/3<sup>+</sup> Reduction

Photoelectrocatalysis

Photocatalysis

Chemical Catalysis

**PART IV. MECHANISTIC UNDERSTANDING AND RATIONAL DESIGN OF CARBON-BASED METAL-FREE CATALYSTS**

(Active Centers, Design Principles, Molecular Design, Structural Design)

**PART V. MULTIFUNCTIONAL APPLICATIONS OF CARBON-BASED METAL-FREE CATALYSTS**

Renewable Energy Technologies

Environmental Protections

Chemical Production

## 本書の著者

**Liming Dai** is the Kent Hale Smith Professor in the Department of Macromolecular Science and Engineering at Case Western Reserve University (CWRU) in Cleveland, Ohio (USA). His expertise covers the synthesis, functionalization, and device fabrication of conjugated polymers and carbon nanomaterials for energy-related and biomedical applications. He has published more than 400 scientific papers and is the author/editor of four books.

## 関連書

### 2. Asymmetric Bronsted Acid Catalysis

By Magnus Rueping, Dixit Parmar, & Erli Sugiono

Feb 2016, 240 pages, Hardback (Wiley)

ISBN: 978-3-527-33917-4 ¥30,800

### 3. Catalysis: From Principles to Applications

Edited by Matthias Beller, Albert Renken, & Rutger A. van Santen

Sept 2012, 664 pages, Hardback (Wiley)

ISBN: 978-3-527-32349-4 ¥17,770

### 4. Catalysis without Precious Metals

Edited by R. Morris Bullock

Aug 2011, 306 pages, Hardback (Wiley-VCH)

ISBN: 978-3-527-32354-8 ¥39,080

### 5. Fundamental Concepts in Heterogeneous Catalysis

By Jens K. Nørskov, Felix Studt, Frank Abild-Pedersen, & Thomas Bligaard

Oct 2014, 208 pages, Hardback (Wiley)

ISBN: 978-1-118-88895-7 ¥18,120

### 6. Fundamentals of Organometallic Catalysis

By Dirk Steinborn, & Alexander Harmsen (Translator)

Nov 2011, 472 pages, Hardback (Wiley)

ISBN: 978-3-527-32716-4 ¥28,160

### 7. Green Catalysis: Homogeneous Catalysis, Volume 1

Edited by Paul T. Anastas & Robert H. Crabtree

Apr 2014, 431 pages, Hardback (Wiley-VCH)

ISBN 978-3-527-68866-1 ¥46,290

### 8. Green Catalysis: Heterogeneous Catalysis, Volume 2

Edited by Paul T. Anastas & Robert H. Crabtree

Apr 2014, 355 pages, Hardback (Wiley-VCH) I

SBN: 978-3-527-32497-2 ¥46,290

### 9. Microwaves in Catalysis: Methodology and Applications

By Satoshi Horikoshi & Nick Serpone

Dec 2015, 454 pages, Hardback (Wiley)

ISBN: 978-3-527-33815-3 ¥36,080

### 10. Multicatalyst System in Asymmetric Catalysis

By Jian Zhou

Oct 2014, 712 pages, Hardback (Wiley) ISBN

978-1-118-07186-1 ¥31,860

### 11. Nanomaterials in Catalysis

Edited by Philippe Serp & Karine Philippot

Nov 2012, 516 pages, Hardback (Wiley-VCH)

ISBN: 978-3-527-33124-6 ¥34,670

### 12. Sustainable Catalysis: Energy-Efficient Reactions and Applications

Edited Rafael Luque & Frank Leung-Yuk Lam

May 2018, 292 pages, Hardback (Wiley)

ISBN: 978-3-527-33867-2 ¥30,800

### 13. Zinc Catalysis: Applications in Organic Synthesis

Edited by Stephan Enthaler & Xiao-Feng Wu

April 2015, 328 pages, (Wiley) ISBN: 978-3-

527-33598-5 ¥34,500

The logo for BOOKMAN, featuring the word "BOOKMAN" in a bold, sans-serif font with a stylized graduation cap above the letter "O".

有限会社 **ブックマン**

〒113-0033

東京都文京区本郷3丁目4-8-501

Tel 03-5684-0561 Fax 03-5684-0562

E-Mail : [sales@e-bookman.co.jp](mailto:sales@e-bookman.co.jp)

ホームページ : <http://e-bookman.co.jp/>

ご注文・お問い合わせは下記へお申し  
込み下さい。

(有)ブックマン

関西・中部・東海統括事務所

Tel 052-740-1829

Fax 052-782-4771

[chubu@e-bookman.co.jp](mailto:chubu@e-bookman.co.jp) / [kansai@e-bookman.co.jp](mailto:kansai@e-bookman.co.jp)

広島海外株

Tel 082-236-3522

Fax 082-236-3530

[books@dear.ne.jp](mailto:books@dear.ne.jp)

福岡海外株

Tel 092-741-2685

Fax 092-741-8418

[fkaigai@lime.ocn.ne.jp](mailto:fkaigai@lime.ocn.ne.jp)