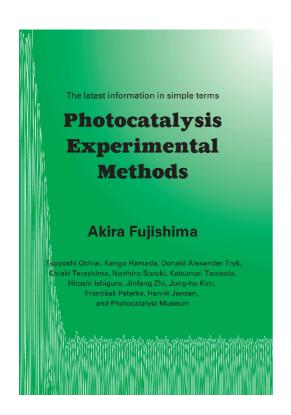
The latest information in simple terms

Photocatalysis Experimental Methods Akira Fujishima et al.



Contents

Chapter1 Basics of Photocatalysts

Chapter2 Photocatalysts and Their Applications

Chapter3 Preparation of Coating Materials

Chapter4 Coating Methods

Chapter5 Evaluation of Materials

Chapter6 Evaluation of Photocatalytic Performance

Chapter7 Light Source Systems

Chapter8 Apparatus System

Chapter9 Product Examples

Chapter10 Antibacterial and Antiviral Performance Evaluation Method

Chapter11 Water splitting by photocatalytic activity

Chapter12 Future Prospects

Chapter13 Photocatalyst Museum

Chapter14 Dissemination of Photocatalyst

Chapter15 Application of Photocatalyst to Air Purification in China

Chapter16 Current Status of Photocatalyst in South Korea

Chapter 17 Status of Photocatalyst in Europe

Reference

Authors: Akira Fujishima, Tsuyoshi Ochiai, Kengo Hamada, Donald Alexander Tryk, Chiaki Terashima,

Norihiro Suzuki, Katsunori Tsunoda, Hitoshi Ishiguro, Jinfang Zhi, Jong-ho Kim, František Peterka, Henrik Jensen,

and Photocatalyst Museum

Publisher: Kitano book Language : English

Publication date: October xx, 2021

Paperback: xxx pages ISBN: xxx-x-xxxxxx-xx_x Price: xxxx yen + tax

新型冠状病毒是目前全世界面临的一个非常严重的问题。二氧化钛光催化剂对新冠病毒 具有一定的灭杀效果,因此受到了广泛的关注。一些基于光催化原理的空气净化器等产品 现已经上市,并得到了好评。

我们很高兴地宣布《光催化实验方法--最新信息的简易解释》一书的英译本已由北野书 店于今年3月正式出版。本书是由东京理科大学光催化国际研究中心和神奈川县立产业技 术综合研究所的光催化研究组(原KAST)的研究人员对光催化功能检测的主要实验方法 等进行了汇编,同时,本书还汇集了有关日本的各类光催化技术的企业及检测机构等相关 信息,并且还涉及了部分中国、韩国和欧洲实施光催化技术的内容。希望这本书的英译本 能给更多的读者在理解光催化这项环保技术的原理与检测,以及开发高效的相关产品方面 提供帮助和广泛使用。

> 代表作者 藤岛昭

Contents

Introduction ii

- 1-1 Crystal structure of titanium dioxide and photocatalytic activity 002
- 1-2 Titanium dioxide is a kind of semiconductor 004
- 1-3 Semiconductor band structure and band gap energy 006
- 1-4 Titanium dioxide photocatalyst uses near ultraviolet light
- 1-5 Mechanism of photocatalytic oxidation and decomposition reaction 011
- 1-6 How does it inducer superhydrophilicity? 013
- 1-7 What about photocatalysts other than titanium dioxide? 015

Photocatalysis and Their Applications 017

- 2-1 Oxidative decomposition and superhydrophilicity and their applications 018
- 2-2 Six major functions of photocatalysis and their applications

Chapter 3 Preparation of Coating Materials

- 3-1 Size and classification of titanium dioxide particles, how to make nanoparticles 024
- 3-2 Types of titanium dioxide coating agents 027
- 3-3 Preparation of titanium dioxide coatings 029



Fig. 2-4 Sustainable development goals (SDGs).

Source: United Nations Development Programme HP

(Akira Fujishima)

- 4-1 Types of coating methods 034
- 4-2 Impregnation method 035
- 4-3 Brush painting method 036
- 4-4 Spray-coating method 038
- 4-5 Roll-coating method 040
- 4-6 Spin-coating method 042
- 4-7 Dip-coating method 044
- 4-8 Sputtering method 047
- 4-9 Vacuum evaporation 049
- 4-10 Ion-plating method 051
- 4-11 CVD method 052

Chapter 5 Evaluation of Materials 055

- 5-1 Characterization of photocatalyst powder 056
 - 1 Particle size distribution 056
 - 2 Specific surface area and pore volume 056
 - 3 Crystal structure 058
 - 4 Bonding state 060
 - 5 Optical response and band gap 063
 - 6 Sample morphology 065
 - 5-2 Characterization of photocatalytic thin film 068
 - 1 Adhesion of the thin film to the substrate 068
 - 2 Grain size (surface roughness) and physical properties on the surface 069
 - 3 Transparency 070
 - 4 Film thickness 072
 - 5 Pencil Hardness 075

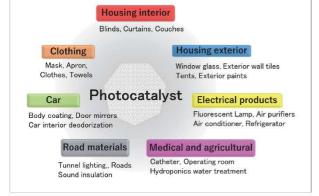


Fig. 2-1 Applications of photocatalysis.

Evaluation of Photocatalytic Performance

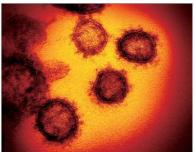
- 6-1 Importance of performance evaluation 078
- 6-2 Outline of JIS test 079

6-3	Evaluation method of decomposition performance for		5 Other methods of evaluating antimicrobial performance
	various VOC by applying JIS standard 087		176 6. Summary 177
6-4	Demonstrative photocatalytic filter performance test		6 Summary 177
	equipment 089		186
6-5	Conclusion 092	Chapter 11	Water splitting by photocatalytic
	Institutions that can perform JIS testing and their contact information 093		activity 179
	momation 655	11-1	History of photocatalytic water splitting and latest research
swinner—ni	11110 0 1 20 1 21		trends 180
Chapter 7	Light Source Systems (Wavelength	11-2	Working principle of photocatalytic water splitting 184
	Characteristics, Intensity, Lifetime, Price,		Experimental methods of water splitting 188
	etc.) 095	11-4	Points that require special attention concerning the
7-1	Sunlight 096		experimental results 190
7-2	CONTROL OF AN AND AN ADVANCE OF THE	40.000	
	Mercury lamps 098	Chapter 12	Future Prospects 195
	Xenon lamps 101	12-1	Water purification 196
7-5	Light-emitting diodes (LEDs) 102 Lasers 106		Agricultural applications 198
	Artificial solar lamps 108	12-3	Medical applications 202
1-7	Artificial solal lamps 100	12-4	Protecting historical landmarks and handcrafted items 205
	A come as record and a factor of some	12-5	Indoor applications 206
Chapter 8	Apparatus System 111	12-6	Research trends in artificial photosynthesis 208
8-1	Limitations of titanium dioxide photocatalysis, and design		
	guidelines based thereon 112	Chapter 13	Photocatalyst Museum 213
8-2	Examples of effective design 114		
8-3	Water purification by combining photocatalytic reaction and		
20 W.	electrolysis with boron-doped diamond electrodes 117	Chapter 14	Dissemination of Photocatalysis
8-4	Conclusion 119		221
		14-1	The photocatalysis industry association of Japan 222
Chapter 9	Product Examples 121	8.7 (2)	List of members 227
0_1	Housing exterior: exterior tile 124	14-2	Kagoshima photocatalysis construction association 229
	Tents for large facilities 125		
9-3	Exterior paints (coating materials) 127	Chapter 15	Application of Photocatalysis to
9-4	Construction site enclosures 130	111111111111111111111111111111111111111	Air Purification in China
9-5	Factory exterior 131	15 1	
9-6	Window glass 132		Application of photocatalysis to air pollution in China 232 The effect of photocatalytic coating on the road near Bai Ma
9-7	Home appliances: air purifiers and air conditioners 134	10-2	road, Beijing. 234
9-8	Filters 137	15-3	The effect of photocatalyst coating on roads near Xingtai
9-9	Refrigerator 140		city, Hebei province. 238
9-10	Medical and agricultural sectors: hospitals 141	15-4	Conclusion 240
9-11	2010 2010 2010 2010 2010 2010 2010 2010		
	Water purification systems 143	Chapter 16	Current Status of Photocatalysis
	Purification of groundwater 144	2010 to 400 to 1	in South Korea
	Road materials: tunnel lighting 146 Sound insulation walls 147		
	Roads 149		Photocatalysis in South Korea 244
	Car-related: side mirrors 151	10-2	Product development for antibacterial and antiviral activity of
	Railways 152	16.3	photocatalysis 247 3 Product development for air purification effects of
	Clothing: masks 153	10-0	photocatalysis 252
	Aprons 154	16-4	Summary 259
9-21	Fabric products 155		
9-22	Towels 155	Chapter 17	Status of Photogatalysis in
	Home interior: blinds and curtains 156	Ollaptel /	■ 10 10 10 10 10 10 10 10 10 10 10 10 10
	Lighting 157		Europe 263
9-25	Photocatalytic mosquito repellent 159	17-1	Global situation about commercialization and
	List of products registered with the photocatalysis industry		standardization of photocatalytic technologies in Europe
	association 161	See Alberta	264
		17-2	2 Industrial situation for photocatalysis in Europe 280
Chapter 10	Antibacterial and Antiviral		Poforonoos
	Performance Evaluation Method		References
	163		
10-1	Photocatalytic antibacterial and antiviral mechanisms and		
	their usefulness 164		
10-2	Evaluation of anti-microbial activity by the JIS/ISO method		
	166		
	1 Antimicrobial performance evaluation method 167	(A)	

2 Antimicrobial performance evaluation method assuming

Antiviral performance evaluation method 173
 Antiviral test method using a glove box 176

real environment 173



Photomicrograph of SARS-CoV-2.

Coronavirus covid-19

Source Pacific Press Service, Photographer, IMAGE POINT FR-LPN/BSIP, Date, Feb. 2020

ORDER SLIP

Please fill out the following information and send it to Kitano Shoten by FAX or e-mail.

The latest information in simple terms **Photocatalyst Experimental Methods** Akira Fujishima et al.

Publication date: October xx, 2021 ISBN: xxx-x-xxxxxx-xx_x Paperback: xxx pages Price: xxxx yen + tax

Company name :	
Billing address :	
Name:	
Phone:	
Address:	
E-mail:	
Please enter the number of items you would like to purchase in the box to the right.	Number of order
Payment method : We will enclose an invoice with the books we ship, so please make payment.	



Kitanobook Co.,Ltd.

Mail: info@kitanobook.co.jp Website: http://kitanobook.co.jp/