

## < 2003 >

### 【学術論文】

- 1) **Effect of the Local Structure of Ti-oxide Species on the Photocatalytic Reactivity and Photoinduced Super-hydrophilic Properties of Ti/Si and Ti/B Binary Oxide Thin Films**  
*Catal. Today*, **85**, 199-206 (2003).
- 2) **Photocatalytic Degradation of 2-Propanol Diluted in Water with TiO<sub>2</sub> Photocatalyst Loaded on Si<sub>3</sub>N<sub>4</sub>**  
*Chem. Lett.*, **10**, 930-931 (2003).
- 3) **Characterization of the Active Sites on Pt-loaded ZSM-5 (Pt/ZSM-5) Prepared by an Ion-exchange Method for the Oxidation of CO at Low Temperatures**  
*Catal. Lett.*, **91**, 111-113 (2003).
- 4) **Photochemical Properties of Ag Ion Clusters Included within ZSM-5 Zeolites Prepared by an Ion-exchange Method**  
*Res. Chem. Intermed.*, **29**, 477-483 (2003).  
(Silver, ZSM-5 zeolite, Photoluminescence, Ion-exchange)
- 5) **In situ Characterization of the Ag<sup>+</sup> Ion-exchanged Zeolites and Their Photocatalytic Activity for the Decomposition of N<sub>2</sub>O into N<sub>2</sub> and O<sub>2</sub> at 298 K**  
*J. Photochem. Photobiol. A: Chem.*, **160**, 43-46 (2003).
- 6) **Local structures, Excited states, and Photocatalytic Reactivities of Highly Dispersed Catalysts Constructed within Zeolites**  
*J. Photochem. Photobiol. C: Photochem. Rev.*, **3**, 225-252 (2003).
- 7) **Incorporation of Silver(I) Ions within Zeolite Cavities and Their Photocatalytic Reactivity for Decomposition of N<sub>2</sub>O into N<sub>2</sub> and O<sub>2</sub>**  
*Intern. J. Photoenerg.*, **5**, 17-19 (2003).
- 8) **Effect of the Addition of Propane and Distortion of Tetrahedral Vanadium (V) Species in VSi $\beta$ Zeolites on the Photodecomposition of NO**  
*Res. Chem. Intermed.*, **29**, 665-680 (2003).
- 9) **Atomic Level Characterization by Synchrotron Radiation for the Design of High Performance Catalysts**  
*Res. Chem. Intermed.*, **29**, 773-782 (2003).
- 10) **Study on the Formation of H<sub>2</sub>O<sub>2</sub> on TiO<sub>2</sub> Photocatalysts and Their Activity for the Photocatalytic Degradation of X-GL dye**  
*Res. Chem. Intermed.*, **29**, 839-848 (2003).
- 11) **Visible-light-responsive Photocatalytic Reaction on Tetrahedrally-coordinated Chromium Oxide Moieties Loaded on ZSM-5 Zeolites and HMS Mesoporous Silica: Partial Oxidation of Propane**  
*Res. Chem. Intermed.*, **29**, 881-890 (2003).
- 12) **Preparation of Titanium-Silicon Binary Oxide Thin Film Photocatalysts by an Ionized Cluster Beam Deposition Method. Their Photocatalytic Activity and Photoinduced Super-Hydrophilicity**  
*J. Phys. Chem. B*, **107**, 51, 14278-14282 (2003).

**13) Effect of Pt Loading on the Photocatalytic Reactivity of Titanium Oxide Thin Films Prepared by Ion Engineering Techniques**

*Res. Chem. Intermed.*, **29**, 6, 619-629 (2003).

**14) Application of Ion Beams for Preparation of TiO<sub>2</sub> Thin Film Photocatalysts Operatable under Visible Light Irradiation: Ion-assisted Deposition and Metal Ion-implantation**

*Nuclear Instrument and Method in Physics Research B*, **206**, 889-892 (2003).

**15) Coating of TiO<sub>2</sub> Photocatalysts on Super-hydrophobic Porous Teflon Membrane by an Ion Assisted Deposition Method and Their Self-cleaning Performance**

*Nuclear Instrument and Method in Physics Research B*, **206**, 898-901 (2003).

**16) The Design and Development of Highly Reactive Titanium Oxide Photocatalysts Operating under Visible Light Irradiation**

*J. Catal.*, **216**, 505-516 (2003).

**17) Photocatalytic Degradation of Organic Compounds Diluted in Water using Visible Light-responsive Metal Ion-implanted TiO<sub>2</sub> Catalysts: Fe Ion-implanted TiO<sub>2</sub>**

*Catal. Today*, **84**, 191-196 (2003).

**18) The Origin of the Decline in the Photocatalytic Activity of TiO<sub>2</sub> in the Decomposition of NO: TPD Spectra of the Adsorbed NO Species**

*Res. Chem. Intermed.*, **29**, 125-135 (2003).

**19) The Relationship between the Local Structures and Photocatalytic Reactivity of Ti-MCM-41 Catalysts**

*Stud. Surf. Sci. Catal.*, **146**, 593-596 (2003).

**20) Local Structures of Active Sites on Ti-MCM-41 and Their Photocatalytic Reactivity for the Decomposition of NO**

*Catal. Lett.*, **90**, 161-163 (2003).

**21) The Effect of the Framework Structure on the Chemical Properties of the Vanadium Oxide Species Incorporated within Zeolite**

*Catal. Today*, **78**, 211-217 (2003).

**22) Local Structure of Highly Dispersed Lead Species Incorporated within Zeolite: Experimental and Theoretical Studies**

*Res. Chem. Intermed.*, **29**, 407-416 (2003).

**23) Quantum Chemical Calculation on the Structure and Adsorption Properties of NO and N<sub>2</sub>O on Ag<sup>+</sup> and Cu<sup>+</sup> Ion-Exchanged Zeolites**

*Struct. Chem.*, **14**, 247-255 (2003).

**24) Interaction of N<sub>2</sub>O with Ag<sup>+</sup> Ion-exchanged Zeolites: an FT-IR Spectroscopy and Quantum Chemical ab initio and DFT Studies**

*J. Mol. Catal. A: Chem.*, **201**, 237-246 (2003).

**25) Hydrogen production using semiconducting oxide photocatalysts**

*Res. Chem. Intermed.*, **29**, 233-256 (2003).

**26) Synthesis of Transparent Ti-containing Mesoporous Silica Thin Film Materials and Their Unique Photocatalytic Activity for the Reduction of CO<sub>2</sub> with H<sub>2</sub>O**

*Appl. Catal. A: General*, **254**, 251-259 (2003).

**27) Experimental Study and Ab Initio Molecular Orbital Calculation on the Photolysis of N-Butyrophenone Included within the Alkali Metal Cation-Exchanged ZSM-5 Zeolite**

*Photochem. Photobio. A. Chem.*, **160**, 37-42 (2003).

**28) Preparation of Hydrophobic Ti-containing Mesoporous Silica by the F-modification and Their Photocatalytic Degradation of Organic Pollutant Diluted in Water**

*Stud. Surf. Sci. Catal.*, 795-798 (2003).

**29) Photocatalytic Epoxidation of Propene with Molecular Oxygen under Visible Light Irradiation on V Ion-implanted Ti-HMS and Cr-HMS Mesoporous Molecular Sieves**

*Stud. Surf. Sci. Catal.*, 597-600 (2003)

**【総説・解説】**

1) 酸化チタン光触媒—基礎原理から最新の可視光化の動向まで—  
*化学*, 58, 18-23 (2003).

2) イオン工学技術による紫外光・可視光応答型の第二世代の酸化チタン光触媒の開発  
*イオン工学ニュース*, 54, 4 (2003).

3) 二酸化チタン光触媒の実用化における最新動向  
*工業材料*, 51, 21-24 (2003).

4) イオンビームを利用する可視光応答型酸化チタン光触媒の開発  
*色材*, 76, 188-197 (2003).

5) 疎水性ゼオライト・メソ多孔質シリカを担体とする酸化チタン光触媒による水中の有機汚染物質の吸着と分解  
*光触媒*, 11, 24-27 (2003).

**6) XAFS Studies on the Local Structures of Photocatalysts**

*Beamline Report BL01B1(XAFS)*, 36-42 (S-10), SPring-8 JASRU (2003).

7) マグネトロンスパッタ法による可視光応答型酸化チタン薄膜光触媒の作製  
*放電研究会資料*, 31-34 (2003).

**【著書】**

1) 先端科学シリーズI 「可視光応答型の高機能な酸化チタン光触媒の開発」  
日本化学会編(丸善), 170-179 (2003).

2) イオン工学ハンドブック 「環境調和型触媒としての光触媒」  
(イオン工学研究所), 955-964 (2003).

3) 水分解光触媒技術の最新動向—太陽光と水で水素を造る—「高分散担持酸化チタン光触媒による気相水を水素源とする二酸化炭素の還元固定化」  
*シーエムシー出版*, 22-48(2003).

4) 水分解光触媒技術の最新動向－太陽光と水で水素を造る－「可視光応答型酸化チタン薄膜の創製とそれを光触媒とする水の完全分解」  
シーエムシー出版, 157-166(2003).

5) 図解 光触媒のすべて「イオン注入による可視光応答型光触媒の創製」  
工業調査会, 107-109 (2003).

6) 図解 エコマテリアルのすべて「環境調和機能を持つ酸化チタン／ゼオライト系光触媒」  
工業調査会, 244-248 (2003).

7) **Semiconductor Photochemistry and Photophysics 「Design and Development of New Titanium Dioxide Semiconductor Photocatalysts」**  
Eds. by V. Ramamurthy and K. S. Schanze, (Marcel Dekker, New York), 283-299 (2003).

8) **Carbon Alloys: Novel Concepts to Develop Carbon Science and Technology 「XAFS Analysis and Applications to Carbons and Catalysts」**  
Eds. by E. Yasuda, M. Inagaki, K. Kaneko, M. Endo, A. Oya, Y. Tanabe, (Elsevier, Oxford), 189-210 (2003).

9) **Science and Technology in Catalysis 2002**  
Eds. by M. Anpo, M. Onaka, H. Yamashita (Kodansha, Tokyo), (2003).