



# HOKKAIDO UNIVERSITY

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**List of Publications from the Research  
Institute for Catalysis (1982)**

In 1982, the following papers by the members of the Research Institute for Catalysis, Hokkaido University, were Published.\*)

**I. Ordinary Articles**

Theoretical Consideration on the Hydrogenation of Butadiene over the Magnesium Oxide Catalyst

O. Nomura, H. Koike and K. Miyahara

Rikagaku Kenkyujo Hokoku (Reports of the Institute of Physical and Chemical Research), **58**, 47 (1982) (in Japanese).

Stereoselectivity in Olefin Metathesis over Molybdenum Oxide Supported on Titanium Oxide

K. Tanaka, K. Miyahara and Ken. Tanaka

J. Mol. Catal., **15**, 133 (1982).

Catalytic Activity of Various Compounds in the Gasification of Carbon. Part 1. Reaction with Oxygen

I. Inagawa, K. Fujikawa, H. Tanaka and K. Miyahara

Muroran Kogyo Daigaku Hokoku (Reports of Muroran Institute of Technology), **10**, 592 (1982) (in Japanese).

Catalytic Reactivity of the Lattice Oxygen Atoms of Terbium Oxide

Y. Takasu, T. Yoko-o, M. Matsui, Y. Matsuda and I. Toyoshima

J. Catal., **77**, 485 (1982).

The Preparation and Characterization of Small Palladium Particles

Y. Takasu, T. Akimaru, K. Kasahara, Y. Matsuda, H. Miura and I. Toyoshima

Proc. 7th ICVM, p. 719 (1982).

The Preparation and Characterization of Model Supported Palladium Catalyst

Y. Takasu, T. Akimaru, K. Kasahara, Y. Matsuda, H. Miura and I. Toyoshima

Shokubai (Catalyst), **24**, 52 (1982) (in Japanese).

State Charges of Perovskite Catalyst  $\text{LaCoO}_3$  by Reduction of Hydrogen

E. A. Lombardo, K. Tanaka and I. Toyoshima

Shokubai (Catalyst), **24**, 282 (1982) (in Japanese).

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\*) A similar list for 1981 appeared in Vol. 30, No. 1 (1982) of this Journal.

*List of Publications*

- Ultraviolet Photoelectron Studies of the Chemisorption and Decomposition of Propyne on Fe(110) and Fe(100) Surfaces  
Y. Takasu and I. Toyoshima  
*J. Electron Spectrosc. and Related Phenomena*, **25**, 149 (1982).
- Preparation of Silicagel-Supported Copper Cluster Catalyst and Its Catalytic Activity for the CO Oxidation  
Y. Kakuta, A. Kazusaka and K. Miyahara  
*Shokubai (Catalyst)*, **24**, 64 (1982) (in Japanese).
- Photocatalytic Reactions on Plantinized Titania. II. Gas-Phase Photo-Kolbe Reaction  
S. Sato  
*Shokubai (Catalyst)*, **24**, 321 (1982) (in Japanese).
- Phase Transitions of a Two-dimensional Chemisorbed System: H on Fe(110)  
R. Imbihl, R. J. Behm, K. Christmann, G. Ertl and T. Matsushima  
*Surf. Sci.*, **117**, 257 (1982).
- Clay Column Chromatography for Optical Resolution: Initial Resolutions of Bis (Acetylacetonato) (Glycinato) Cobalt (III) and (Acetylacetonato) Bis (Glycinato) Cobalt (III) on a *A*-Tris (1, 10-phenanthroline) Nickel (II)-montmorillonite Column  
A. Yamagishi and R. Ohnishi  
*Inorg. Chem.*, **21**, 4233 (1982).
- Effect of Sulfate Ions on Activity of TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> for the 2-Pinene Isomerization Reaction  
R. Ohnishi, T. Morikawa, Y. Hiraga and K. Tanabe  
*Z. Phys. Chem. N. F.*, **130**, 205 (1982).
- Clay Column Chromatography for Optical Resolution: Partial Resolution of Tris (Acetylacetonato) Metal (III) on a *A*-Tris (1, 10-phenanthroline) Ruthenium (II) Montmorillonite Column  
A. Yamagishi and R. Ohnishi  
*J. Chromatography*, **245**, 213 (1982).
- Electrolytic Reduction by Electron or by Hydrogen Adatom on Pd  
M. Enyo  
*Denki Kagaku (Electrochemistry)*, **50**, 743 (1982) (in Japanese).
- Hydrogen Electrode Reaction on a Thin Layer of Copper and Silver Deposited on Palladium  
M. Enyo  
*J. Res. Inst. Catal.*, **30**, 11 (1982).

*List of Publications*

- Palladium + Tin Oxide Catalyst for Electrooxidation of Methanol and Its Chemical Characterization by X-Ray Photoelectron Spectroscopy  
A. Katayama-Aramata and I. Toyoshima  
J. Electroanal. Chem., **135**, 111 (1982).
- Reduction of Butenes and Butadiene on Pt/C Catalysts Suspended in Aqueous Solution  
H. Kita, K. Shimazu, Y. Kakuno and A. Katayama-Aramata  
J. Catal., **74**, 323 (1982).
- Infrared Study of Adsorbed Species on Electrodes: Adsorption of Carbon Monoxide on Pt, Rh and Au  
R. Beden, A. Bewick, K. Kunimatsu and C. Lamy  
J. Electroanal. Chem., **142**, 345 (1982).
- Application of In-Situ IR Reflectance Spectroscopy to Electrochemical System. Adsorption and Oxidation of Methanol on Pt Electrodes  
K. Kunimatsu  
Shokubai (Catalyst), **24**, 2249 (1982).
- A Kinetic Study on Electron Transfer Step of Hydrogen Evolution Reaction on Silver in Sodium Hydroxide by a Galvanostatic Transient Method  
K. Kunimatsu and A. Matsuda  
J. Res. Inst. Catal., **30**, 111 (1982).
- Empirical Relation between Free Energies of Hydration and Ionization Potentials of Monoatomic Cations  
R. Notoya and A. Matsuda  
J. Res. Inst. Catal., **30**, 1 (1982).
- An Empirical Approach to the Evaluation of the Absolute Electromotive Force and Free Energy of Solvation of Monoatomic Cations in Fused Salts  
R. Notoya and A. Matsuda  
Nippon Kagaku-Kaishi (J. Chem. Soc. Japan), **6**, 990 (1982) (in Japanese).
- Absolute Donor and Acceptor Numbers for Solvation of Monoatomic Cations  
A. Matsuda and R. Notoya  
Extended Abstracts of 6-th Congress on Electrochemistry in USSR, **3**, 3454 (1982) (in Russian).
- Thermodynamical Empirical Rules for Solvation of Monoatomic Ions in Aqueous and Non-Aqueous Media  
R. Notoya and A. Matsuda  
Int. Soc. Electrochem., **1**, 266 (1982).

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- Classification of Monoatomic Cations by the Nature of Solvation Bonding  
R. Notoya and A. Matsuda  
J. Res. Inst. Catal., **30**, 61 (1982).
- Relationship between Electron Acceptability of Monoatomic Cations in Solvation and Catalytic Activity of Their Oxides  
R. Notoya, A. Matsuda, Yu. S. Khokakov and Kh. M. Minachev  
J. Res. Inst. Catal., **3**, 195 (1982).
- Speed Distribution of Monoatomic, Diatomic and Polyatomic Molecular Beams Scattered by the (111) Plane of Silver  
H. Asada and T. Matsui  
Japanese J. Appl. Phys., **21**, 259 (1982).
- A Model for the Zero Order Desorption Kinetics  
H. Asada  
J. Res. Inst. Catal., **30**, 55 (1982).
- Adsorption of Si and co-adsorption with CO on Rhenium  
K. Ishizuka and T. Iwata  
Shokubai (Catalyst), **24**, 258 (1982) (in Japanese).
- A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets. VIII. Mini-1 and Midi-1 Sets for Ga through Cd  
Y. Sakai, H. Tatewaki and S. Huzinaga  
J. Computational Chem., **3**, 6 (1982).
- Electronic Structure of Calcium Rydberg Series  
T. Nomura and H. Tatewaki  
Phys. Rev. A, **26**, 1516 (1982).
- Electronic Structure of Small Copper Clusters. I  
H. Tatewaki, E. Miyoshi and T. Nakamura  
J. Chem. Phys., **76**, 5073 (1982).

**II. Letters and Communications**

- The Catalytic Activity of a Novel Silica-Supported Copper Catalyst for the CO Oxidation with N<sub>2</sub>O  
N. Kakuta, A. Kazusaka and K. Miyahara  
Chem. Lett., 913 (1982).
- XPS and UPS Studies of O<sub>2</sub>, C<sub>2</sub>H<sub>4</sub> and CO Adsorption on Silver  
H. Miura, A. Ayame, H. Kano, K. Miyahara and I. Toyoshima  
Shinku (Vacuum), **24**, 302 (1982) (in Japanese).

*List of Publications*

- Further Improvement of Mole-fraction Determinations of Gaseous Binary Mixtures  
Using Photoelectron Intensity Measurements  
Y. Achiba, K. Kimura, N. Kakuta and K. Miyahara  
J. Electron Spectrosc. and Related Phenomena, **28**, 139 (1982).
- The Crystallite Size of  $\alpha$ -Iron in the Presence of  $K_2O$  in the Doubly Promoted  
Ammonia Synthesis Iron Catalysts  
Y. Sasa, M. Uda and I. Toyoshima  
Chem. Lett., p. 2011 (1982).
- Auger Electron Spectroscopic Evidence for the Racemic Adsorption of Tris (1, 10-  
phenanthroline) Iron (II) on Sodium Montmorillonite  
A. Yamagishi, Ken. Tanaka and I. Toyoshima  
J. Chem. Soc., Chem. Commun., 344 (1982).
- Effect of Particle Size on the Activity of Supported Palladium Catalysts  
Y. Takasu, T. Akimaru, K. Kasahara, Y. Matsuda, H. Miura and I. Toyoshima  
J. Am. Chem. Soc., **104**, 5249 (1982).
- Adsorption of Nitrous Oxide on Metallic Copper Catalysts  
K. Narita, N. Takezawa, H. Kobayashi and I. Toyoshima  
React. Kinet. Catal. Lett., **189**, 91 (1982). 1
- Photocatalytic Synthesis of Ethane from Acetic Acid. Kolbe Reaction at a Gas-Solid  
Interface under U. V.-Illumination  
S. Sato  
J. Chem. Soc., Chem. Commun., 26 (1982).
- Angular Distribution of the Desorption of  $CO_2$  Produced on Pt (111) Surface at Low  
Temperatures  
T. Matsushima  
Surf. Sci., **123**, L663 (1982).
- Chromatographic Resolution of Tris (Acetylacetonato)-(Cobalt (III)) on a 4-Tris (1, 10-  
Phenanthroline) Nickel (II) Montmorillonite Column  
A. Yamagishi, R. Ohnishi and M. Soma  
Chem. Lett., 85 (1982).
- On the Mechanism of the Chlorine Evolution Reaction of Pt Electrode: Comments  
on the Paper by B. E. Conway and D. M. Novak  
T. Yokoyama and M. Enyo  
J. Electroanal. Chem., **136**, 185 (1982).

*List of Publications***III. Notes**

Potential Dependence of Infrared Reflection Absorption Spectrum of the Adsorbed Carbon Monoxide Produced by Chemisorption of Methanol on a Smooth Platinum Electrode: A New In-Situ IR Spectroscopic Method for the Determination of the Spectrum at a Fixed Potential

K. Kunimatsu

J. Electroanal. Chem., **140**, 205 (1982).

Estimation of the Surface Potential of Water

R. Notoya and M. Matsuda

J. Res. Inst. Catal., **30**, 107 (1982).

Numerical Representation of Electron Donor and Acceptor Abilities of Monoatomic Cations and Solvents in the Solvation Process

A. Matsuda and R. Notoya

J. Res. Inst. Catal., **30**, 191 (1982).

**IV. Reviews**

IR Spectra of the Surface Species on Electrodes

K. Kunimatsu

Hyo-men (Surface), **20**, 197 (1982) (in Japanese).

Scattering of Atoms and Molecules from Solid Surfaces

H. Asada and Y. Ohno

Shinku (Vacuum), **25**, 485 (1982) (in Japanese).