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**List of Publications from the Research
Institute for Catalysis (1981)**

In 1981, the following papers by the members of the Research Institute for Catalysis, Hokkaido University, were Published.*)

I. Ordinary Articles

- Absolute Electromotive Force of Standard Ferrocene-Ferricinium Electrode in Aqueous and Non-Aqueous Media
R. Notoya, H. Hiratsuka and A. Matsuda
J. Res. Inst. Catalysis, **29**, 11 (1981).
- Correlation between Polarographic Half-Wave Potentials and Electronic Absorption Spectra of Conjugated Aromatic Hydrocarbons
R. Notoya and A. Matsuda
J. Res. Inst. Catalysis, **29**, 67 (1981).
- Mechanism of Hydrogen Evolution Reaction on Gold in Aqueous Sulfuric Acid and Sodium Hydroxide
T. Sasaki and A. Matsuda
J. Res. Inst. Catalysis, **29**, 113 (1981).
- A Study of the Electric Double Layer and the Kinetics of the Electron Transfer Step of the Hydrogen Evolution Reaction on Silver in Sulfuric Acid Solutions by a Galvanostatic Transient Method
K. Kunimatsu and A. Matsuda
J. Res. Inst. Catalysis, **29**, 133 (1981).
- IR Vibrational Spectroscopy of Species in the Electrode Electrolyte Solution Interface
A. Bewick, K. Kunimatsu, J. Robinson and J. Russell
J. Electroanal. Chem., **119**, 175 (1981).
- Development of *in-situ* Electromodulated Infrared Reflectance Spectroscopy and Its Application to Electrochemical Systems
K. Kunimatsu, A. Bewick and J. Russell
Shobukai (Catalyst), **23**, 266 (1981) (in Japanese).
- Significance of the Surface Potential in Charge Transfer Electrode Kinetics
M. Enyo
J. Res. Inst. Catalysis, **29**, 1 (1981).

*) A similar list for 1980 appeared in Vol. 29, No. 1(1981) of this Journal.

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- Hydrogen Absorption by Palladium Electrode Polarized in Sulfuric Acid Solution Containing Surface Active Substances. 1. The Cathodic Region
T. Maoka and M. Enyo
Electrochim. Acta, **26**, 607 (1981).
- Hydrogen Absorption by Palladium Electrode Polarized in Sulfuric Acid Solution Containing Surface Active Substances — II. The Anodic Region
T. Maoka and M. Enyo
Electrochim. Acta, **26**, 615 (1981).
- Lead Underpotential Deposition on Gold Single-Crystal Surfaces: The (100) Face and its Vicinal Faces
A. Hamelin and A. Katayama
J. Electroanal. Chem., **117**, 221 (1981).
- Surface Composition and Catalytic Activity of Platinum-Tin Oxide and Palladium-Tin Oxide against Methanol Electrooxidation
A. Aramata and I. Toyoshima
Shokubai (Catalyst), **23**, 263 (1981) (in Japanese).
- The Characterization of a Novel Metathesis Catalyst, β -Titanium Oxide-Supported Molybdenum Oxide
Ka. Tanaka, K. Miyahara and Ke. Tanaka
Bull. Chem. Soc. Japan, **54**, 3106 (1981)
- Orientation in the Addition of HD Molecules to Buta-1, 3-diene over ZnO Catalyst
Ke. Tanaka, K. Aomura, T. Okuhara and K. Miyahara
J. Chem. Soc. Faraday Trans. I, **77**, 1697 (1981).
- Interaction of HCl and HBr with a Molybdena-Alumina Catalyst
S. Abdo, A. Kazusaka and R. F. Howe
J. Phys. Chem., **85**, 1380 (1981).
- Temperature-Programmed Desorption on the Unstable Lattice Oxygen of Praseodymicem Oxide
Y. Takasu, M. Matsui, H. Tamura, I. Kawamura, Y. Matsuda and I. Toyoshima
J. Catalysis, **69**, 51 (1981).
- Photocatalytic Reaction of Water with Carbon over Platinized Titania
S. Sato and J. M. White
J. Phys. Chem., **85**, 336 (1981).
- Photoassisted Hydrogen Production from Titania and Water
S. Sato and J. M. White
J. Phys. Chem., **85**, 592 (1981).

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- Rate Analysis of Elementary Steps in Propene Hydrogenation over Evaporated Rhodium Film
S. Sato, T. Iyama and K. Miyahara
J. Catalysis, **69**, 77 (1981).
- Photocatalytic Water Decomposition and Water-Gas Shift Reactions over NaOH-Coated Pt/TiO₂ Catalysts
S. Sato and J. M. White
J. Catalysis, **69**, 128 (1981).
- Hydrogenation of Ethylene on Metal Electrodes Part 5. Reaction of Light Ethylene on Pt in Deuteroperchloric Acid Solution and the Dual-Pathway Mechanism
K. Fujikawa, H. Kita and S. Sato
J. Chem. Soc. Faraday Trans. I, **77**, 3035 (1981).
- Photocatalytic Reactions over Platinized Titania. Water Splitting and Related Reactions.
S. Sato and J. M. White
Shokubai (Catalyst), **23**, 323 (1981) (in Japanese).
- Scattering of Linear Molecules from Solid Surfaces
H. Asada
Surface Science, **110**, 270 (1981).
- A Simple Representation for the Space and Speed Distribution of Gas Atoms Scattered by Solid Surfaces
H. Asada
Surface Science, **105**, 579 (1981).
- Scattering of Diatomic and Polyatomic Molecules from the (111) Plane of Silver
H. Asada
Japan. J. Appl. Phys., **20**, 527 (1981).
- A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets IV. The Effect of Additional 3s Functions Introduced by the Use of the Six-membered 3d GYO's
H. Tatewaki, Y. Sakai and S. Huzinaga
J. Comp. Chem., **2**, 94 (1981).
- A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets V. —From Na through Ca—
Y. Sakai, H. Tatewaki and S. Huzinaga
J. Comp. Chem., **2**, 100 (1981).

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- A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets VI. Ab Initio Calculation on Molecules Containing Na through Cl
Y. Sakai, H. Tatewaki and S. Huzinaga
J. Comp. Chem., **2**, 108 (1981).
- A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets VII. —MINI-3, MINI-4, MIDI-3 and MIDI-4 Sets for Transition Metal Atoms—
H. Tatewaki, Y. Sakai and S. Huzinaga
J. Comp. Chem., **2**, 278 (1981).
- Thermal Desorption Spectroscopic Study of Methanol Decomposition on Tungsten and Rhenium Surfaces
J. Kubota and K. Azuma
Shokubai (Catalyst), **23**, 368 (1981) (in Japanese).

II. Letters and Communications

- XPS Study of the in-depth Profile of $\text{TiO}_2\text{-Al}_2\text{O}_3$ Catalysts Prepared by Different Methods
E. Rodenas, H. Hattori and I. Toyoshima
React. Kinet. Catal. Lett., **16** 73 (1981).
- Effect of Adsorbed Oxygen to Nitrogen Adsorption on Fe (100) and (111) Surfaces
I. Toyoshima
Shinku (Vacuum), **24**, 64 (1981) (in Japanese).
- The Importance of the Quadrupole Polarizability on the Physisorption Problem
H. Tatewaki and T. Nakamura
Surface Science, **108**, L447 (1981).

III. Notes

- Mutual Relationship between Free Energies of Solvation of Monoatomic Cations in Non-Aqueous Media and in Water
A. Matsuda and R. Notoya
J. Res. Inst. Catalysis, **29**, 151 (1981).
- Reconstruction of a Stepped Fe(111) Surface Due to Oxygen Adsorption
K. Yoshida
J. Res. Inst. Catalysis, **29**, 159 (1981).
- Polarization of Rare Gas Atoms in the Vicinity of Surfaces of Alkali Halide Crystals
K. Higashi, H. Tatewaki and T. Nakamura
J. Res. Inst. Catalysis, **29**, 87 (1981).

List of Publications

Characteristics of the Gaussian-Type Orbitals

H. Tatewaki

J. Chem. Phys., **74**, 4207 (1981).

Varieties of MgO Catalysts for 1,3-Butadiene Hydrogenation

K. Miyahara, Y. Murata, I. Toyoshima, Y. Tanaka and T. Yokoyama

J. Catalysis, **68**, 186 (1981).

A Reply to the Comment by Engelhardt

Ke. Tanaka, Ka. Tanaka and K. Miyahara

J. Catalysis, **72**, 182 (1981).

Oxygen Exchange Reaction between Molecular Oxygen and Carbon Monoxide in a Mass Spectrometer

S. Yokoyama, Ke. Tanaka, K. Miyahara, I. Takakuwa and M. Seisho

Radioisotopes, **30**, 679 (1981).

Electrosorption of Methanol on a Pt Electrode. IR Spectroscopic Evidence for Adsorbed CO Species

B. Beden, A. Bewick, C. Lamy and K. Kunimatsu

J. Electroanal. Chem., **121**, 343 (1981).**IV. Reviews**

Active Sites on Metal Sulfide and Oxide Catalysts

K. Miyahara

Hyo-men (Surface), **19**, 288 (1981) (in Japanese).

ESR Spectroscopic Characterization of Solid Catalysts

A. Kazusaka

Shokubai (Catalyst), **23**, 396 (1981) (in Japanese).