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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 Interphase
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.

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 againt 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).

List of Publications

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/TiO_2 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).

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 TiO_2-Al_2O_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).

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).