List of Publications, the Research Institute for Catalysis (1976)

In 1976, the following papers by the members of the Research Institute for Catalysis, Hokkaido University were published.

I. Ordinary articles

Adsorption Isotherm and the States of Adsorption
J. HORIUTI and T. TOYA
This Journal, **24**, 159 (1976).

Self-Consistent Theory of the Martensitic Phase Transformation in Metallic Lithium*)
R. P. BAJPAI, M. ONO, Y. OHNO and T. TOYA
Phys. Rev. B **12**, 2194 (1975).

Adsorption of Water on Au and Mercury on Au, Ag, Mo and Re: Measurements of the Changes in Work Function
R. P. BAJPAI, H. KITA and K. AZUMA
Japan. J. Appl. Phys., **15**, 2083 (1976).

The Intermediates Formed on MoS_2 in the Olefin Exchange Reactions and Their Properties
T. OKUHARA, T. KONDO, K. TANAKA and K. MIYAHARA
Shokubai (Catalyst), **18**, 87 P (1976) (in Japanese).

Reaction Structure Analysis of Ethylene Hydrogenation on Metallic Catalysts
S. SATO and K. MIYAHARA
Shokubai (Catalyst), **18**, 153 (1976) (in Japanese).

Catalytic Activity of Iron Sulfates for Friedel-Crafts Type Benzylation of Toluene with Benzyl Chloride
K. ARATA, K. SATO and T. TOYOSHIMA
J. Catalysis, **42**, 221 (1976).

Friedel-Crafts Reaction in the Heterogeneous System V.
Friedel-Crafts Benzylation and Benzylation of Toluene Catalyzed by Calcined Iron Sulfates
K. ARATA, K. YABE and I. TOYOSHIMA
J. Catalysis, **44**, 385 (1976).

*) This paper was published in 1975, but we were unable to include it in a similar list given at the end of Vol. 23 (1975) of this Journal (Editor).

Nitrogen Chemisorption on Reduced Cobalt Oxide with and without K_2O
M. SUZUKI and I. TOYOSHIMA
Proceedings of the 6th International Congress on Catalysis, London, 1976.

Thermal Desorption Apparatus Made for Trial and Its Facilities
I. TOYOSHIMA, K. RYO and M. HASHIMOTO
Sinku (Vacuum), **19**, 348 (1976) (in Japanese).

The Low-Temperature Catalytic Oxidation of CO with N_2O by Molybdenum Oxide Supported on Silica Gel
A. KAZUSAKA and J. H. LUNSFORD
J. Catalysis, **45**, 25 (1976).

Oxidation of CO with N_2O by Means of Molybdenum Catalysts
A. KAZUSAKA and J. H. LUNSFORD
Shokubai (Catalyst), **18**, 27 P (1976) in (Japanese).

Application of the Theory of Stoichiometric Number Determination of the Rate-determining Step: The Mechanism of Water-gas Shift Reaction Catalyzed by Platinum
M. MASUDA
This Journal, **24**, 83 (1976).

Kinetic Study of Electron Transfer Step of Hydrogen Electrode Reaction on Metals
A. MATSUDA, R. NOTOYA, T. OHMORI, K. KUNIMATSU and T. KUSHIMOTO
This Journal, **24**, 187 (1976).

Study of the Effect of Solution pH to the Surface State of Rhodium Electrode in Aqueous Solution of KCl
R. NOTOYA and O. A. PETRII
Doklad' Akademii Nauk USSR, **226**, 117 (1976) (in Russian).

Interaction between Adsorbed Atoms and Conduction Electrons of Thin Evaporated Films
M. WATANABE
Thin Solid Films, **36**, 65 (1976).

Change of Mechanism of the Hydrogen Electrode Reaction with Overpotential III. Potential Dependence of the Deuterium Separation Factor on Pt, Au, and Ni Cathodes
M. ENYO
Electrochim. Acta, **21**, 15 (1976).

List of Publications

Hydrogen Electrode Reaction Mechanism on Pd and Its Relevance to Hydrogen Sorption
M. ENYO and T. MAOKA
Surface Technology, **4**, 277 (1976).

Elementary Reaction Rates of the Hydrogen Electrode Reaction on Ni Analyzed by Means of Deuterium Tracer I. The Anodic Region
T. MATSUSHIMA and M. ENYO
Electrochim. Acta, **21**, 241 (1976).

Elementary Reaction Rates of the Hydrogen Electrode Reaction on Ni Analyzed by Means of Deuterium Tracer II. The Cathodic Region
T. MATSUSHIMA and M. ENYO
Electrochim. Acta, **21**, 823 (1976).

Studies on the Mechanism of the Hydrogen Ionization Reaction on Rh in Alkaline Solution by Means of Deuterium Tracer
T. MATSUSHIMA and M. ENYO
Electrochim. Acta, **21**, 1029 (1976).

On the Mechanism and Kinetics of the CO-oxidation Reaction on Polycrystalline Palladium. I. Reaction Paths*)
T. MATSUSHIMA and J. M. WHITE
J. Catalysis, **39**, 265 (1975).

On the Mechanism and Kinetics of the CO-oxidation Reaction on Polycrystalline Palladium. II. The Kinetics*)
T. MATSUSHIMA, D. B. ALMY, D. C. FOYT, J. S. CLOSE and J. M. WHITE
J. Catalysis, **39**, 277 (1975).

Kinetics of the Reaction of Oxygen with Carbon Monoxide Adsorbed on Palladium*)
T. MATSUSHIMA and J. M. WHITE
J. Catalysis, **40**, 334 (1975).

The Adsorption of Carbon Monoxide on Palladium During the Catalyzed Reaction, $CO+\frac{1}{2}O_2 \rightarrow CO_2$
T. MATSUSHIMA, C. J. MUSSETT and J. M. WHITE
J. Catalysis, **41**, 397 (1976).

Thermal Decomposition of Methanol Adsorbed on Alumina
T. MATSUSHIMA and J. M. WHITE
J. Catalysis, **44**, 183 (1976).

*) See the footnote on p. 227.

Molecular Orbital Studies of Hydrogen Adsorption on Ni and Cu Surfaces
H. ITOH
Japan. J. Appl. Phys., **15**, 2311 (1976).

The Second $^3\Sigma_u^-$ State of O_2
M. YOSHIMINE, K. TANAKA, H. TATEWAKI, S. OBARA, F. SASAKI and K. OHNO
J. Chem. Phys., **64**, 2254 (1976).

Variational Calculation of Low-Energy Electron Diffraction Spectra
Y. HAMAUZU
J. Phys. Soc. of Japan, **41**, 958 (1976).

Diffraction of a Molecular Beam at Solid Surfaces
Y. HAMAUZU
Bussei Kenkyu, **26**, 65 (1976) (in Japanese).

II. Short Notes and Letters

Number of Active Sites and Turnover Number for Hetergeneous Catalysis
MIYAHARA and A. KAZUSAKA
This Journal, **24**, 65 (1976).

Determination of the Dependence of the Hydrogen Ion Adsorption or Iridium in Solution pH at Reversible Hydrogen Potential
R. NOTOYA and O. A. PETRII
Elektrokhimiya, **12**, 655 (1976) (in Russian).

Evidence for Two Kinds of Active Sites on a Molybdenum Sulfide
K. TANAKA, T. OKUHARA, S. SATO and K. MIYAHARA
J. Catalysis., **43**, 360 (1976).

Olefin Metathesis Reaction on a MoS_2 Catalyst
T. OKUHARA and K. TANAKA
J. Catalysis, **42**, 474 (1976).

Conservation of Hydrogen Molecularity in the Hydrogenation of Olefins over Molybdenum Sulfide
T. OKUHARA, K. TANAKA and K. MIYAHARA
J. Chem. Soc., Chem. Comm., 42 (1976).

Orientation in the Addition of HD to Butadiene on MoS_2
T. OKUHARA and K. TANAKA
J. Chem. Soc., Chem. Comm., 199 (1976).

Intermediate of the Hydrogenation of Butadiene on a MoS_2 Catalyst
T. OKUHARA, T. KONDO and K. TANAKA
Chem. Letters, 717 (1976).

Intermediate of the Homomolecular Oxygen Exchange Reaction at Liquid Nitrogen Temperature
K. TANAKA and A. KAZUSAKA
Chem. Phys. Lett., **39**, 536 (1976).

Restricted Rotation of σ-alkyl Intermediates on a MoS_2 Catalyst
T. OKUHARA and K. TANAKA
J. Am. Chem. Soc., **98**, 7884 (1976).

Variatioal Calculation of the Intensity-Energy Spectra of Low-Energy Electron Diffraction by the Nickel (100) Surface
Y. HAMAUZU
Physics Letters, **56A**, 417 (1976).

Resonance Minima and Maxima in the Diffraction Intensities of Atomic Beams from Solid Surfaces
Y. HAMAUZU
Physics Letters, **57 A**, 275 (1976).

Calculation of the Fast Electron Scattering Cross Sections from the Hydrogen Molecule (Errata)
S. ISHI and K. TANAKA
J. Phys. Soc. Japan, **41**, 1800 (1976).

III. Review articles

Reaction Structure of Ethylene Hydrogenation on Metals
S. SATO
This Journal, **24**, 127 (1976).

Adsorbed Oxygen Species on Heterogeneous Catalysts and Their Reactivity
K. TANAKA
Kagaku Kogyo (Chemical Industry), **27**, 504 (1976) (in Japanese).

On the Papers, "Chemical Reaction on Surfaces" and "The Mechanism of the Catalytic Action of Platinum in the Reactions $2CO+O_2=2CO_2$ and $2H_2+O_2=2H_2O$" by I. LANGMUIR
K. TANAKA
Kagaku no Genten (Classic Papers in Chemistry) Vol. 6, Tokyo University Press, Tokyo, 1976, p. 157 (in Japanese).

On the Paper, "The Mechanism of the Hydrogen Electrode Process on Platinum" by J. HORIUTI and M. IKUSHIMA
M. ENYO and T. KEII
Kagaku no Genten (Classic Papers in Chemistry) Vol. 6, Tokyo University Press, Tokyo, 1976, p. 116 (in Japanese).

Electronic Theory of Solid Surfaces
T. TOYA
Bussei Kenkyu, **26**, C95 (1976) (in Japanse).