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List of Publications from the Research Institute for Catalysis (1980)

In 1980, the following papers by the members of the Research Institute for Catalysis, Hokkaido University, were Published.*)

I. Ordinary Articles

Standard Molal Real Free Energies of Solvation of Monoatomic Ions and Absolute Electrode Potentials in Fused Salts
R. Notoya and A. Matsuda
J. Res. Inst. Catalysis, **28**, 1 (1980).

Standard Real Free Energies of Ionization of Single Atoms and Ions in Aqueous Media
A. Matsuda, R. Notoya and H. Hiratsuka
J. Res. Inst. Catalysis, **28**, 79 (1980).

Absolute Electromotive Forces of Single Electrodes
A. Matsuda, R. Notoya and H. Hiratsuka
J. Res. Inst. Catalysis, **28**, 269 (1980).

The Overpotential Components on the Palladium Hydrogen Electrode
M. Enyo and T. Maoka
J. Electroanal. Chem., **108**, 277 (1980).

On the Explanation of Cells in High School Science Course
T. Yokoyama and M. Enyo
Kagaku-kyoiku (Chemical Education), **28**, 298 (1980) (in Japanese).

Electrooxidation of Methanol on a Platinum-Tin Oxide Catalyst
A. Katayama
J. Phys. Chem., **84**, 376 (1980).

Barbiturates at the Mercury/Solution Interface an Ellipsometric Study
K. Kunimatsu and R. Parsons
J. Electroanal. Chem., **100**, 335 (1979).

Infra Red Spectroscopy of the Electrode-Electrolyte Interphase
A. Bewick and K. Kunimatsu
Surface Science, **101**, 131 (1980).

Hydrogen Exchange, Isomerization, Hydrogenation and Metathesis of Olefin on Solid Surfaces— Unsaturated Coordination Model of Active Sites
K. Miyahara
J. Res. Inst. Catalysis, **28**, 279 (1980).

*) A similar list for 1979 appeared in Vol. 28, No. 1 (1980) of this Journal.

List of Publications

Varieties of MgO Catalysts for 1, 3-Butadiene Hydrogenation
K. Miyahara, Y. Murata, I. Toyoshima, Y. Tanaka and T. Yokoyama
Tech. Rep. of ISSP, Series A-1083 (1980).

Olefin Metathesis Reaction over Supported Molybdenum Oxide Catalysts
Ka. Tanaka, K. Miyahara and Ke. Tanaka
Preprint No. B47 of the 7th Intern. Congr. Catal., Tokyo, 1980.

Mechanism of Methane Formation by Catalytic Hydrogenation of Carbon
Ke. Tanaka, T. Okuhara, K. Miyahara and K. Aomura
Nippon Kagakukai-shi, Chem. Soc. Japan **1980**, 945 (in Japanese).

The Promoting Effects of Various Alkali Metal Carbonates on the Reduction of Carbon Dioxide with Carbon
S. Yokoyama, K. Miyahara, Ke. Tanaka, J. Tashiro and I. Takakuwa
Nippon Kagakukai-shi, Chem. Soc. Japan **1980**, 974 (in Japanese).

Reduction of Carbon by Carbon Dioxide Catalyzed by Alkali Metal Carbonates
S. Yokoyama, K. Miyahara, Ke. Tanaka, I. Toyoshima, J. Tashiro and K. Takakuwa
Shokubai (Catalyst), **22**, 1 (1980) (in Japanese).

Stereoselectivity of Olefin Metathesis Reaction over Supported Molybdenum Oxide Catalysts
Ka. Tanaka, M. Itoh, K. Miyahara and Ke. Tanaka
Shokubai (Catalyst), **22**, 274 (1980) (in Japanese).

Spectroscopic Characterization of Alumina Supported Transition Metal Carbonyl Catalysts. 1. $Mo(CO)_6$
A. Kazusaka and R. F. Howe
J. Mol. Catalysis, **9**, 183 (1980).

Spectroscopic Characterization of Alumina Supported Transition Metal Carbonyl Catalysts. 2. $W(CO)_6$ and $Cr(CO)_6$
A. Kazusaka and R. F. Howe
J. Mol. Catalysis, **9**, 199 (1980).

Interaction of Nitric Oxide with Supported Chromium, Molybdenum and Tungsten Catalysts
A. Kazusaka and R. F. Howe
J. Catalysis, **63**, 447 (1980).

Spins Trapping of Molecules Adsorbed on Zinc Oxide
T. Matsuzaki, T. Uda, A. Kazusaka, G. W. Keulks and R. F. Howe
J. Am. Chem. Soc., **102**, 7511 (1980).

List of Publications

Tracer Studies of the Reaction Paths of the CO Oxidation over Polycrystalline Palladium and Rhodium
T. Matsushima
J. Catalysis, **64**, 38 (1980).

Tracer Studies of the Reaction Paths and Kinetics of CO Oxidation over Platinum, Palladium, Iridium and Rhodium
T. Matsushima
Proceeding of the 7th International Congress on Catalysis, Tokyo, 1980.

Base-catalysed Deuterium Exchange Reactions of 6, 6-Dimethyl-2-methylenebicyclo [3. 1. 1] heptane [Pin-2 (10)-ene] and 6, 6-Dimethylbicyclo [3. 1. 1] heptan-2-one (Nopinone)
R. Ohnishi
J. Chem. Soc. Perkin Trans. II, 530 (1980).

Photocatalytic Production of Hydrogen from Water and Texas Lignite by Use of Platinized Titania Catalyst
S. Sato and J. M. White
Ind. Eng. Chem. Prod. Res. Dev., **19**, 542 (1980).

Photoassisted Water-gas Shift Reaction over Platizized TiO_2 Catalysts
S. Sato and J. M. White
J. Am. Chem. Soc., **102**, 7206 (1980).

Magnetic Resonance Studies of Hydrogen Adsorbed on Zinc Oxide. 1. ESR of Conduction Electrons in the Accumulation Layer of Zinc Oxide
M. Watanabe
Japan. J. Appl. Phys., **19**, 1853 (1980).

Magnetic Resonance Studies of Hydrogen Adsorbed on Zinc Oxide. II. Proton NMR of Chemisorbed Hydrogen and Molecular Hydrogen Adsorbed Ionically
M. Watanabe and T. Ito
Japan. J. Appl. Phys., **19**, 1863 (1980).

Charge-transfered States of H_2 and CO on ZnO
M. Watanabe and T. Ito
Proc. 8th Internl. Vacuum Congress and 4th Internl. Conf. on Solid Surfaces, Cannes, 440 (1980).

NMR Study of the Interaction between Xenon and Zeolites A, X and Y
T. Ito and J. P. Fraissard
Proc. Vth Internl. Conf. on Zeolites, Napoli, p. 510, 1980.

XPS and AES Studies of Adsorption of CH_3OH on W and Re
J. Kubota, K. Yoshida, K. Azuma, K. Miyahara and I. Toyoshima
Shokubai (Catalyst), **22**, 319 (1980) (in Japanese).

Study of CH_3OH Adsorbed on W and Re by XPS and AES
J. Kubota, K. Yoshida, K. Azuma, K. Miyahara and I. Toyoshima
Shokubai (Catalyst), **22**, 319 (1980) (in Japanese).

Field-emission Microscopic Study of Catalytic Decomposition of Methanol on Metal Surfaces Part 1. Tungsten
J. Kubota and K. Azuma
J. Chem. Soc. Faraday I, **76**, 558 (1980).

Adsorption of NH_3 on Iron Single Crystal Surfaces; (110) (111) and Stepped (111) Surfaces
K. Yoshida
J. Res. Inst. Catalysis, **28**, 15 (1980).

Field Emission Microscopic Study of the Adsorption of Sulfin and its Compounds on Molybdenum
K. Ishizuka
27th International Field Emission Symposium, Tokyo, p. 123, 1980.

The Effect of Sulfin on the Adsorption of H_2, CO, N_2 and C_2H_4 on Molybdenum: Flash Desorption Combined with FEM
T. Kikuchi and K. Ishizuka
27th International Field Emission Symposium, Tokyo, p. 128, 1980.

Scattering of Rare Gas Atoms from the (111) Plane of Silver
H. Asada
Japan. J. Appl. Phys., **19**, 2055 (1980).

On the Coverage Dependence of the Surface Diffusion Constant
H. Asada and M. Masuda
Surface Sci., **99**, L429 (1980).

Dividing Surface in Transition State Theory of Reaction Rates: Note on Horiuti's Paper, "On the Statistical Mechanical Treatment of the Absolute Rate of Chemical Reaction"
T. Nakamura
J. Res. Inst. Catalysis, **28**, 293 (1980).

Systematic Preparation of New Contracted Gaussian-type Orbital Sets II. Test Basis Sets for Cu_2 Molecule with and without Splitting of the Outer Orbitals
H. Tatewaki and S. Huzinaga
J. Chem. Phys., **72**, 399 (1980).

A Systematic Preparation of New Contracted Gaussian-Type Orbital Sets III. Second Row Atoms from Li through Ne
H. Tatewaki and S. Huzinaga
J. Comp. Chem., **1**, 205 (1980).

Compact Contracted Gaussian-type Basis Sets from Li to Ne
H. Tatewaki and S. Huzinaga
Int. J. Quantum Chem., **S. 14**, 93 (1980).

Compact Contracted Gaussian-type Basis Sets from Na to Ar
Y. Sakai, H. Tatewaki and S. Huzinaga
Int. J. Quantum Chem., **S. 14**, 107 (1980).

II. Letters and Communications

Reactions of Water with Carbon and Ethylene over Illuminated Pt/TiO_2
S. Sato and J. M. White
Chem. Phys. Lett., **70**, 131 (1980).

Photodecomposition of Water over Pt/TiO_2 Catalysts
S. Sato and J. M. White
Chem. Phys. Lett., **72**, 83 (1980).

X-ray Photoelectron Spectroscopic Study of the Surface of Carbon Doped with Potassium Carbonate
S. Yokoyama, Ka. Tanaka, I. Toyoshima, K. Miyahara, K. Yoshida and J. Tashiro
Chem. Letters, Chem. Soc. Japan **1980**, 599.

On the Reversibility of Metal Carbene Formation Process in Olefin Metathesis Reaction over MoO_x/β-TiO_2 Catalyst
Ka. Tanaka, K. Miyahara and Ke. Tanaka
Chem. Letters, Chem. Soc. Japan **1980**, 623.

Stereoselectivity in the Metathesis Reaction of But-2-ene on a β-Titanium Oxide-supported Molybdenum Oxide
Ka. Tanaka, Ke. Tanaka and K. Miyahara
Chem. Commun., J. Chem. Soc. **1980**, 666.

III. Notes

Infra Red Spectroscopy of the Electrode-Electrolyte Interphase
A. Bewick, K. Kunimatsu and B. S. Pons
Electrochim. Acta, **25**, 465 (1980).

Surface Characterization by Underpotential Deposition: Leed on Gold Surfaces
A. Hamelin, A. Katayama, G. Picq and P. Vennereau
J. Electroanal, Chem., **113**, 293 (1980).

Adsorption of CO on a Stepped Fe(111) Surface
K. Yoshida
J. Res. Inst. Catalysis, **28**, 105 (1980).

Standard Molal Real Free Energies of Solvation of Individual Ions and Electromotive Forces of Single Electrodes in Non-Aqueous Solutions (Addendum)
A. Matsuda and R. Notoya
J. Res. Inst. Catalysis, **28**, 67 (1980).

IV. Review

Conceptions and Developments in the Rate Theory of Chemical Reactions
K. Miyahara
Kagaku Kyoiku (Chemical Education), Chem. Soc. Japan, **28**, 342 (1980) (in Japanese).