



# HOKKAIDO UNIVERSITY

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**List of Publications from the Research  
Institute for Catalysis (1977)**

In 1977, the following papers by the members of the Research Institute for Catalysis, Hokkaido University were published.\*)

**I. Ordinary articles**

- The Kinetic Study of Electron Transfer Step of Hydrogen Electrode Reaction on Ga and Ni in Aqueous Sodium Hydroxide Solutions  
A. MATSUDA, R. NOTOYA, T. OHMORI, K. KUNIMATSU and T. KUSHIMOTO  
*Elektrokhimiya*, **13**, 726 (1977) (in Russian).
- The Study of Kinetics of Electron Transfer Step in Hydrogen Evolution Reaction on Metals  
A. MATSUDA, R. NOTOYA, T. OHMORI, K. KUNIMATSU and T. KUSHIMOTO  
*Elektrokhimiya*, **13**, 1659 (1977) (in Russian).
- The Study of pH Effect on Surface States of Iridium Electrode in Aqueous KCl Solutions  
R. NOTOYA  
*Elektrokhimiya*, **13**, 1702 (1977) (in Russian).
- Friedel-Crafts Reaction in Heterogeneous System VI. Friedel-Crafts Isopropylation of Toluene with Isopropyl Halides Catalyzed by Calcined Iron Sulfates. Substrate and Positional Selectivity  
K. ARATA and I. TOYOSHIMA  
*J. Catalysis*, **47**, 109 (1977).
- Nitrogen Chemisorption on Cobalt Catalysts Promoted with and without Potassium Oxide  
H. SUZUKI and I. TOYOSHIMA  
*Proc. 6th Int. Congr. on Catalysis*, Vol. 2, p. 708 (1977).
- Catalytic Activity of Fe<sub>2</sub>O<sub>3</sub> Prepared from Iron Sulfates by Thermal Decomposition  
K. ARATA, K. YABE, M. HINO and I. TOYOSHIMA  
*Shokubai (Catalyst)*, **19**, 136 P (1977) (in Japanese).
- Electroreduction of Acetone on Platinum in Sulfuric Acid Solution and Catalytic Action of Platinum and Mercury Electrodes  
H. KITA, K. SAITO and A. KATAYAMA  
*J. Res. Inst. Catalysis*, **25**, 45 (1977).

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\*) A similar list for 1976 appeared in Vol. 24, No. 3 (1976) of this Journal.

*List of Publications*

- Study of Hydrogen Adsorption on Platinum-Graphite Catalysts  
A. KATAYAMA and H. KITA  
Shokubai (Catalyst), **19**, 94 P (1977) (in Japanese).
- Change of Mechanism of the Hydrogen Electrode Reaction with Overpotential  
IV. Surface Coverage Effect  
M. ENYO  
J. Res. Inst. Catalysis, **25**, 17 (1977).
- EHMO Calculation for Hydrogen Adsorption on Ni and Cu Atom Clusters  
H. ITOH  
Proc. Int. Meeting on Small Particles and Inorganic Clusters, 1976, Lyon,  
J. Phys. (Paris), Suppl. C 2-23 (1977).
- Molecular Orbital Calculations of Adsorption of CO on Ni and Cu Metal  
Clusters  
H. ITOH  
Japan. J. Appl. Phys., **17**, 2125 (1977).
- Resonance in Atom Diffraction by Crystal Surfaces  
Y. HAMAUZU  
J. Phys. Soc. Japan, **42**, 961 (1977).
- Oxyfunctionalization of Hydrocarbons 6. Electrophilic Oxygenation of Ali-  
phatic Alcohols, Ketones, and Aldehydes with Ozone in Superacids. Pre-  
paration of Bifunctional Derivatives\*)  
G. A. OLAH, N. YONEDA and R. OHNISHI  
J. Am. Chem. Soc., **98**, 7341 (1976).
- Adsorption States of Hydrogen on Pt, W, Cu and Alloy Systems of  $Cu_{1-x}Ni_x$   
Studied by NMR  
T. ITŌ and T. KADOWAKI  
Proc. 7th Int. Vacuum Congress and 3rd Int. Conference on Solid Sur-  
faces, Vienna, 1977, Vol. II, p. 979 (1977).
- NMR Study of Adsorption of Hydrogen on Tungsten  
T. ITŌ, T. KUMAGAI and T. KADOWAKI  
Japan. J. Appl. Phys., **16**, 1919 (1977).
- Polarization of Atoms in the Vicinity of Solid Surfaces by Surface Electric  
Field: Effect of Field Inhomogeneity  
T. NAKAMURA and H. TATEWAKI  
J. Res. Inst. Catalysis, **25**, 159 (1977).

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\*) This paper was published in 1976, but not included in the 1976 list in Vol. 24, No. 3 (1976) of this Journal (Editor).

*List of Publications*

- The Reactivity and Auger Chemical Shift of Oxygen Adsorbed on Platinum  
T. MATSUSHIMA, D. B. ALMY and J. M. WHITE  
Surface Science, **67**, 89 (1977).
- An Auger Spectroscopic Study of the Kinetic Behavior of Adsorbed Oxygen  
on Palladium  
T. MATSUSHIMA and J. M. WHITE  
Surface Science, **67**, 122 (1977).
- Reaction Structure of the CO Oxidation on Palladium Metal  
T. MATSUSHIMA and J. M. WHITE  
Shokubai (Catalyst), **19**, 118 P (1977) (in Japanese).
- Hydrogenation of Ethylene on a MoS<sub>2</sub> Catalyst  
T. OKUHARA, K. TANAKA and K. MIYAHARA  
J. Catalysis, **48**, 229 (1977).
- Oriented Addition of HD Molecule to Butadiene on a ZnO Catalyst  
K. TANAKA, T. OKUHARA and K. MIYAHARA  
The 4th Japan-Soviet Catalysis Seminar Preprints 3-1 (1977).
- Intermediates of Catalyzed Hydrogenation  
T. OKUHARA, T. KONDO, K. TANAKA and K. MIYAHARA  
Shokubai (Catalyst), **19**, 41 P (1977) (in Japanese).
- Catalysis on MoS<sub>2</sub> Single Crystal: Mechanism and Anisotropy of Catalysis  
T. OKUHARA, K. TANAKA and K. MIYAHARA  
Shokubai (Catalyst), **19**, 140 P (1977) (in Japanese).
- Hydrogen Adsorption on ZnO and Its Isotope Effect at Low Temperatures  
M. WATANABE  
Shokubai (Catalyst), **19**, 91 P (1977) (in Japanese).
- Scattering of Helium and Hydrogen Molecular Beams from the (111) Plane  
of Silver  
H. ASADA  
J. Res. Inst. Catalysis, **25**, 175 (1977).
- Ab Initio* SCF CI Calculations on the Ground and  $\pi-\pi^*$  Excited States of  
the Pyrrole Molecule and Its Positive Ion  
K. TANAKA, T. NOMURA, T. NORO, H. TATEWAKI, T. TAKADA, H. KASHIWAGI,  
F. SASAKI and K. OHNO  
J. Chem. Phys., **67**, 5738 (1977).

*List of Publications***II. Short Notes and Letters**

- Energy Distribution of Field Emission from the Oxide-Cluster on Mo Surface  
H. YAMADA and K. AZUMA  
Japan. J. Appl. Phys., **16**, 1065 (1977).
- Homomolecular Oxygen Isotopic Exchange Reaction on Zinc Sulfide below  
-80°C  
K. TANAKA, A. KAZUSAKA, A. YAMAZAKI and K. MIYAHARA  
J. Phys. Chem., **81**, 2681 (1977).
- Intermediates of the Hydrogenation of  $\alpha$ -Olefins on a MoS<sub>2</sub> Catalyst  
T. OKUHARA, T. KONDO, K. TANAKA and K. MIYAHARA  
J. Phys. Chem., **81**, 90 (1977).
- Superoxide Ion Formation Process on Reduced MoO<sub>3</sub>-TiO<sub>2</sub>  
A. KAZUSAKA, T. WATANABE, K. MIYAHARA, K. TANAKA and K. TANABE  
Chem. Phys. Letters, **50**, 491 (1977).
- Change from a  $\sigma$ -Alkyl Intermediate to a Carbonium Ion Intermediate in  
Reactions of Olefins on a Molybdenum Sulfide Catalyst  
T. OKUHARA, K. TANAKA and K. TANABE  
J. Chem. Soc., Chem. Comm., 180 (1977).
- Oriented Adsorption of HD on ZnO and Catalytic Addition of HD to Buta-  
diene on It  
T. OKUHARA, T. KONDO and K. TANAKA  
J. Phys. Chem., **81**, 808 (1977).
- N-Propenyl and  $\sigma$ -Alkyl Intermediates in the Hydrogenation of Methyl-  
acetylene and Allene on MoS<sub>2</sub>  
T. OKUHARA, T. KONDO and K. TANAKA  
Chem. Letters, 119 (1977).
- Preparation of Iridized Electrode by Reduction Method  
R. NOTOYA  
J. Res. Inst. Catalysis, **25**, 41 (1977).
- Hydrogen Overvoltage on Titanium in Sulfuric Acid  
T. OKADA and A. MATSUDA  
J. Res. Inst. Catalysis, **25**, 193 (1977).
- Erratum: Self-Consistent Theory of the Martensitic Phase Transformation  
in Metallic Lithium [Phys. Rev. **B12**, 2194 (1975)]  
R. P. BAJPAI, M. ONO, Y. OHNO and T. TOYA  
Phys. Rev., **B15**, 3285 (1977).

*List of Publications***III. Review Articles**

Regulation of Intermediates on Sulfided Nickel and MoS<sub>2</sub> Catalysts

K. TANAKA and T. OKUHARA

Catalysis Reviews, **15**, 249 (1977).

Structures of Active Sites and Their Catalyses

T. OKUHARA and K. TANAKA

Shokubai (Catalyst), **19**, 429 (1977) (in Japanese).

*Ab Initio* Calculations on the Electronic Structure of the Diatomic Molecules

H. TATEWAKI and S. OBARA

Nippon Butsurigakukai-shi (Butsuri), **32**, 205 (1977) (in Japanese).

Chemisorption in Ultra High Vacuum

I. TOYOSHIMA

Shin Zikken Kagaku Koza, Maruzen Co., Vol. 18 (Interface and Colloid),  
p. 142 (1977) (in Japanese).

Thermal Desorption

I. TOYOSHIMA and I. YASUMORI

Shin Zikken Kagaku Koza, Maruzen Co., Vol. 18 (Interface and Colloid),  
p. 136 (1977) (in Japanese).

Application of Electron Spin Resonance to the Study of Heterogeneous  
Catalysis

A. KAZUSAKA

Hyomen (Surface), **15**, 686 (1977) (in Japanese).