

Table of Contents

Preface.....	iii
Table of Contents	v

Electrocatalysis (Beyond Fuel Cells)

Shape-Dependent Electrocatalysis: CO Monolayer Oxidation at Platinum Nanoparticles

J. Solla-Gullón, F. J. Vidal-Iglesias, P. Rodríguez, E. Herrero, J. M. Feliu, and A. Aldaz 1

Formation of an H-Bonded Water Structure at Pt Surfaces Induced by Adsorbed Carbon Monoxide

E. A. Batista, A. C. Gutierrez, W. Vielstich, and T. Iwasita 12

Decay of Metastable Nonequilibrium Phases, Enhanced Reaction Rate, and Dynamic Phase Transition in a Model of Co Oxidation with Co Desorption

E. Machado, G. M. Buendia, A. Rikvold, and R. M. Ziff..... 19

Active Site Behavior at Platinum Electrode Surfaces

L. D. Burke, S. Garbarino, and C. W. M. Castleton 26

Role of Adsorbed Anions on the Electrocatalytic Hydrogenation of CO₂ on PT

P. Dubé and G. M. Brisard..... 37

Hydrogen Sorption Behavior of Nanodeposits of Palladium and Its Alloys

A. Czerwiński, I. Kiersztyn, M. Łukaszewski, and M. Grdeń..... 46

Oxidation of Hydrogen on Oxidized Platinum and Film Thickness Measurement by Tunneling Spectroscopy

J. E. Bao and D. D. Macdonald..... 55

Electrochemical *In-Situ* X-Ray Diffraction Characterization of Hydrogen Absorption in Nanocrystalline Ti₂RuM

M. E. Bonneau, C. Chabanier, M. Blouin, L. Roué, D. Guay, and R. Schulz 68

Core Level Binding Energy Shifts in Metal Nanoparticles: The Role of Lattice Strain	
P. S. Bagus and A. Wieckowski	76
Origin of the Enhanced Electrocatalytic Activities of Carbon and Oxide Supported Pt-Based Alloy Nanoparticles	
I.-S. Park, S. J. Yoo, K.-W. Park, T. Hyeon, and Y.-E. Sung.....	90
Characterization of Nanoporous Metallic Films of Controlled Architecture	
A. R. Hillman and S. J. Daisley	102
Pt Loading on Multiwalled Carbon Nanotubes Obtained by CVD on Fuel Cell Backings	
S. H. Sun, D. Villers, A. M. Serventi, R. Li, J. P. Dodelet, and S. Désilets	113
STM Observation of Sulfur Dimerization in Alkanethiol Monolayers Self-Assembled on Au{111}	
C. O'Dwyer	123
X-Ray Photoelectron Spectroscopy and X-Ray Diffraction Characterization of Rhodium Oxides in Reductive Conditions	
F. Laplante, N. Bertrand, A. Tavares, S. Trasatti, and D. Guay	133
Electrochemical Response of Diamond Films Grown on Reticulated Vitreous Carbon at Different Graphitization Index	
A.V. Diniz, V. J. Trava-Airoldi, and N. G. Ferreira	143
Mechanism and Modeling of H Adsorption, Absorption, and Evolution	
L. Birry and A. Lasia	150
<u>Oxygen Reduction Electrocatalysts</u>	
Determination of Catalyst Unique Parameters for the Oxygen Reduction Reaction	
K. C. Neyerlin, W. Gu, and H. A. Gasteiger	160
Carbon Structure and Activity of Non-Noble Catalysts for Oxygen Reduction in PEMFC	
F. Jaouen, F. Charretre, and J. P. Dodelet.....	176
Platinum Monolayer Electrocatalysts for Oxygen Reduction	
M. B. Vukmorovic, J. Zhang, K. Sasaki, Y. Xu, A. U. Nilekar, M. Mavrikakis, F. Uribe, and R. R. Adzic.....	188

Shape-Dependent Electrocatalysis: Oxygen Reduction on Gold Nanoparticles	
J. Hernández, E. Herrero, J. Solla-Gullón, F. J. Vidal-Iglesias, J. M. Feliu, and A. Aldaz	200
Why Is There Such a Small Overpotential for O₂ Electroreduction by Copper Laccase?	
H. Schweiger, E. Vayner, and A. B. Anderson.....	213
Combinatorial Discovery of Alloy Electrocatalysts for Oxygen Reduction Reaction	
E. Kreidler, L. Minor, L. Xiong, and T. He	222
Possible Cooperative Oxygen Reduction Reactions on (111)-(100) Nanofaceted Platinum Surfaces in Perchloric Acid	
V. Komanicky, A. Menzel, and H. You.....	231
Catalysts for Oxygen Reduction in PEM Fuel Cells Based on Co/Fe Porphyrins	
M. A. Grigoriu, D. Villers, F. Jaouen, and J. P. Dodelet	242
Evidence for the Involvement of Oxygen Vacancies in the Oxygen Electrode Reaction on Passive Titanium	
B. Roh and D. D. Macdonald.....	254

Polymer Electrolyte Membrane (Proton Exchange Membrane) Fuel Cells (PEMFC) and Other Fuel Cell Topics

PEMFC Electrochemistry: Simulation of Nonequilibrium Surface Chemistry on 3-Dimensional Geometries	
V. Rai, M. Aryanpour, A. Dhanda, S. Walch, and H. Pitsch.....	264
Methanol Crossover Effects on Cathode Potential and Performance of a Direct Methanol Fuel Cell	
V. A. Paganin, G. R. P. Malpass, T. Iwasita, and W. Vielstich.....	277
Methanol Tolerance Properties of Bimetallic (Pt-M) Catalysts for Oxygen Reduction in DMFCs	
A. S. Aricó, V. Baglio, A. Stassi, C. D'Urso, A. Di Blasi, V. Antonucci, and A. M. Castro Luna.....	286
Cathodic Electrocatalysts Tolerant to Methanol for Direct Methanol Fuel Cell	
J.-M. Léger, S. Baranton, K. R. Koffi, C. Coutanceau, and C. Lamy ...	295

Active Form of Ruthenium for the CH₃OH Electro-oxidation Reaction: Introduction of a Simple Electrochemical <i>In-Situ</i> Method	
C. Bock, A. Collier, and B. MacDougall	305
Determination of Ethanol Crossover Through a MEA by Cyclic Voltammetry	
J. Ling and O. Savadogo	320
Catalytic Activity of Carbon-Supported Electrocatalysts for Direct Ethanol Fuel Cell Applications	
F. J. Rodríguez Varela and O. Savadogo	330
Evaluation of the Fe(III)/Fe(II) Redox Fuel Cell Cathode Couple	
K. Fatih, D. P. Wilkinson, F. Moraw, and F. Girard	341
Mechanism of the Electro-oxidation at a Platinum Electrode of Dimethyl Ether, a Possible Fuel for PEM Fuel Cells	
G. Kerangueven, C. Coutanceau, E. Sibert, F. Hahn, J.-M. Léger, and C. Lamy	351
AUTHOR INDEX	361
SUBJECT INDEX	366