
Pits & Pores 7: Nanomaterials – Fabrication Processes, Properties, and Applications

Editors:

P. Granitzer

R. Boukherroub

D. J. Lockwood

H. Masuda

Sponsoring Divisions:



Corrosion



Luminescence and Display Materials



Published by

The Electrochemical Society

65 South Main Street, Building D
Pennington, NJ 08534-2839, USA

tel 609 737 1902

fax 609 737 2743

www.electrochem.org

ecstransactions™

Vol. 75, No. 1

Copyright 2016 by The Electrochemical Society.
All rights reserved.

This book has been registered with Copyright Clearance Center.
For further information, please contact the Copyright Clearance Center,
Salem, Massachusetts.

Published by:

The Electrochemical Society
65 South Main Street
Pennington, New Jersey 08534-2839, USA

Telephone 609.737.1902
Fax 609.737.2743
e-mail: ecs@electrochem.org
Web: www.electrochem.org

ISSN 1938-6737 (online)
ISSN 1938-5862 (print)
ISSN 2151-2051 (cd-rom)

ISBN 978-1-62332-360-8 (CD-ROM)
ISBN 978-1-60768-718-4 (PDF)

Printed in the United States of America.

ECS Transactions, Volume 75, Issue 1
Pits & Pores 7: Nanomaterials – Fabrication Processes,
Properties, and Applications

Table of Contents

Preface *iii*

Chapter 1
Semiconductor Dissolution

(Invited) The Effects of Laser Ablation Texturing and Nanoparticles on Anodic
Nanotube and Porous Film Formation 3
K. W. Kolasinski, D. A. Znamensky, A. S. Ganas, H. M. Snodgrass, G. J. Sturgeon,
J. L. Hernández-Pozos

Crystallographically-Oriented Macropores in Multi-Crystalline Zn 9
M. D. Gerngross, J. Carstensen, R. Adelung

Chapter 2
Fabrication and Characterization

(Invited) Preparation of Ordered Anodic Porous Alumina Through-Hole Membrane
and Its Applications 21
T. Yanagishita, H. Masuda

Variance-Based Sensitivity of Localized Sulphation to Microporous Separator
Properties Using a Distributed Parameter Model of a Valve-Regulated Lead-Acid
Battery 27
A. Janse van Rensburg, G. van Schoor, P. A. van Vuuren

Chapter 3

Magnetic and Optical Properties

- Control of the Magnetic Properties of a Magnetic Field Guidable Biocompatible Nanovehicle 51
P. Granitzer, K. Rumpf, M. Reissner, P. Poelt
- Synthesis and Magnetic Characterization of (Porous Silicon/"Hard-Soft" Magnetic) Nanocomposites 57
K. Rumpf, P. Granitzer, H. Michor, P. Poelt

Chapter 4

Optical Properties and Applications

- (Invited) Porous Silicon Dissolution Monitoring and Optical Constants Measurement Using in Situ Photoconduction in HF 63
B. Gelloz, K. Ichimura, H. Fuwa, E. Kondoh, L. Jin
- Si/SiGe Heterointerfaces in One-, Two-, and Three-Dimensional Nanostructures: Their Effect on SiGe Light Emission 77
D. J. Lockwood, X. Wu, J. M. Baribeau, S. A. Mala, X. Wang, L. Tsybeskov
- (Invited) Porous Silicon for Energy Storage at Microscale: Supercapacitors 97
K. Grigoros, J. Keskinen, L. Grönberg, J. Ahopelto, M. Prunnila

Chapter 5

Selforganized Nanostructures

- Pit Formation, Patterning and Flattening of Ge Surfaces in O₂-Containing Water by Metal-Assisted Chemical Etching 107
T. Kawase, A. Mura, Y. Saito, T. Okamoto, K. Kawai, Y. Sano, K. Yamauchi, M. Morita, K. Arima
- Chemical Sculpturing of Al Micro-Particles for Polymer Composites and Universal Polymer-Polymer Joints 113
M. Baytekin-Gerngross, M. D. Gerngross, J. Carstensen, R. Adelung

Chapter 6
Poster Session

PbS Quantum Dots and Au Nanoparticle Co-Sensitized Black TiO ₂ Nanotubes for Photocurrent Enhancement	125
<i>K. Du, G. Liu, H. San, X. Chen, K. Wang</i>	

Chapter 7
Corrosion

Pitting Corrosion of Copper Tubes for Drinking Water Applications Due to Silicate Films	137
<i>R. Feser, S. Schewe</i>	

Author Index	145
--------------	-----