
High Resolution Characterization of Corrosion Processes 3

Editors:

K. R. Zavadil

Sandia National Laboratories
Albuquerque, New Mexico, USA

K. Azumi

Hokkaido University
Sapporo, Hokkaido, Japan

P. Schmutz

EMPA
Duebendorf, Switzerland

Sponsoring Division:



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. 50, No. 47

Copyright 2013 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 978-1-62332-083-6 (Softcover)
978-1-60768-435-0 (PDF)

Printed in the United States of America.

Table of Contents

Preface *iii*

Chapter 1 **Microelectrochemical Methods and Microscopy**

Microscopic Polarization Behavior and Thermodynamic Stability of TiS and Ti₄C₂S₂
Inclusions in Stainless Steels 3
N. Shimahashi, I. Muto, Y. Sugawara, N. Hara

Microelectrochemical Investigation of Pit Initiation and Selective Dissolution between
MnS and Stainless Steel 15
A. Chiba, I. Muto, Y. Sugawara, N. Hara

Chapter 2 **Inhibition and Coatings**

Corrosion Inhibition by Zinc Corrosion Products on Zinc-Coated Steel 27
Y. Sato, K. Azumi

Chapter 3 **Scanning Probe Methods: Development**

High Resolution Characterization of Pitting Corrosion Using a Novel Environmental
SVET and White Light Interferometry 37
S. Geary, H. N. McMurray, A. C. A. de Vooy

Investigation into the Effect of Spot Weld Electrode Life and Quality on the Corrosion
Behavior of Galvanized Automotive Steel Using the Three-dimensional Scanning
Vibrating Technique 53
B. P. Wilson, J. R. Searle, K. Yliniemi, T. B. Jones, D. A. Worsley, H. N. McMurray

Chapter 4
Scanning Probe Methods: Applications

Localised SKP Studies of Cathodic Disbondment on Chromium/Chromium Oxide Coated Steel	67
<i>D. J. Warren, H. N. McMurray, A. C. A. de Vooy</i>	
Author Index	79