

Table of Contents

Foreword

Electrochemical, Microscopic and Surface Analytical Investigations of Chemical Breakdown of Passivity M. Janik-Czachor	1
Electrochemical Methods in Stress Corrosion Cracking Z. Szklarska-Smialowska	11
Microelectrochemical Investigations of MnS Inclusions T. Suter, T. Peter and H. Böhni	25
Examples of Electrochemical Testing of Stainless Steels in Industrial Environments O. Forsén, J. Aromaa and M. Tavi	41
The Passivation of Al-W Alloys Produced by Ion Implantation C.M. Rangel and M.A. Travassos	53
Factors Affecting the Reliability of Hydrogen Permeation Measurement A. Turnbull	63
About the Influence of the Electronic Properties of Passive Layers on the Corrosion Rate U. König	79
Anodic Films on Stainless Steel AISI 304 in Carbonate Aqueous Solution AT pH 8 M. Drogowska, L. Bossard, H. Ménard and A. Laisa	89
Pitting Dissolution Current Induced by Non-Equilibrium Fluctuations R. Aogaki and M. Asanuma	101
Electrochemical Incorporation of Molybdenum in the Passive Layer of a 17% Cr Ferritic Stainless Steel¹ S. Maximovitch, G. Barral, F. Le Cras and F. Claudet	111
Modelling the Initiation of Crevice Corrosion of Passive Alloys at Elevated Temperatures J. Postlethwaite, R.W. Evitts and M.K. Watson	121
Pit-Initiation Studies on Polycrystalline, (100), (110) and (111) Oriented Aluminium Surfaces C.B. Breslin, G. Treacy and C.M. Quinn	133
Localised Corrosion of Advanced Stainless Steels S. Huizinga and J.G. de Jong	143
Influence of Molybdenum on the Corrosion Properties of Sputter-Deposited Stainless Steel Films M. Kraack, H. Böhni and W. Muster	165
A Characterisation of Titanium Passivation Films by In-Situ AC Impedance Measurements and XPS Analysis C. da Fonseca and M.d. Cunha Belo	177
Test Method for Measurement of Pit Propagation Rates W.K. Cheung, P.E. Francis and A. Turnbull	185
Application of Transient Electrochemical Techniques to Characterize Thin Passive Films on Tin in Carbonate-Bicarbonate Solution P.E. Alvarez, F.E. Varela and J.R. Vilche	197
A Study on the Initial Stages of Oxidation of Copper In Alkaline Solution by Electrochemical and XPS Analysis G. Capobianco, P. Fabris, A. Glisenti and G. Granozzi	207
Surface Film Electric Resistance and Semiconductive Properties of Iridium/Iridium Oxide J. Kukkonen, O. Forsén, J. Aromaa and S. Yläsaari	213
Effect of pH on Electrochemical Behaviour and Passive Film Composition of Stainless Steels B. Elsner and A.M. Rossi	225
Chemical Dissolution and Electrochemical Dissolution Mechanism for the Initiation of Localised Corrosion R.X. Li and M.G.S. Ferreira	237
Possibilities for Life Time Prediction of Organic Coatings with Electrochemical Impedance Measurements J.H.W. de Wit, H.J.W. Lenderink, D.H. van der Weijde and E.P.M. van Westing	253

EIS Study of Organic Coating Performance P.L. Bonora, F. Deflorian and L. Fedrizzi	267
On the Use of 'In Situ' UV-Visible and Infrared Spectroscopic Techniques for Studying Corrosion Products and Corrosion Inhibitors B. Beden	277
Protective Properties of Multilayer Organic Coatings on Al Alloys P. Carbonini, T. Monetta, L. Nicodemo, P. Mastronardi, B. Scatteia and F. Bellucci	291
Organic Coated Steel Submitted to Cathodic Protection Studied by Electrochemical Methods J.P. Quintela, R.C.A.d. Oliveira, I.C.P. Margarit and O.R. Mattos	305
Application of Electrochemical Impedance Spectroscopy to Study the Atmospheric Corrosion of Painted Metals A. Amirudin and D. Thierry	317
Electrochemical Impedance Spectroscopy Characterization of the Protection by Anodized Layers on Aluminium Alloys N. Celati, M.C. Sainte Catherine, M. Keddam and H. Takenouti	335
Electrochemical Measurements during the Formation of Thin Film Conversion Coatings A.M. Etheridge, J.M. Sykes, J.D.B. Sharman and E. McAlpine	345
Corrosion Monitoring of ZRP on Steel by EIS to Evaluate the Performance of Different Coating Formulations C. Gervasi, R. Armas, A.R. Di Sarli, E.C. Bucharsky, S.G. Real and J.R. Vilche	357
The Inhibiting Action of Indole and Some of its Derivates on Corrosion of Mild Steel in 1N Sulphuric Acid G. Moretti, G. Quartarone, A. Tassan and A. Zingales	363
Formation of Porous Anodic Oxide Films Containing Chromium Ions on Aluminium H. Konno, Y. Baba and R. Furuichi	379
Corrosion Inhibitor Characteristics of Benzotriazole and Potassium Ethyl Xanthate for Copper in Chloride Solutions R.M. Souto, V. Fox, M. Perez, M.M. Laz and S. Gonzalez	385
Chemical and Electrochemical Interactions on Corroding Metal Surfaces H.S. Isaacs and A.J. Aldykiewics Jr.	395
Study of the Rusted Steel/Electrolyte System by Electrochemical Techniques J.M. Bastidas, S. Feliu, J.C. Galván, S. Feliu Jr., J. Simancas, M. Morcillo and E.M. Almeida	407
Pitting Corrosion of Laser Surface Modified Aluminium Alloys M.G.S. Ferreira, R.X. Li, J.S. Fernandes, A. Almeida, R. Vilar, K.G. Watkins and W.M. Steen	421
The Interrelationship between Marine Biofouling, Cathodic Protection and Microbiologically Influenced Corrosion B.J. Little and P.A. Wagner	433
Cyclic Laboratory Test Methods to More Closely Simulate Corrosion Performance of Zinalume® Coated Steel under Atmospheric Exposure Conditions G.W. Walter	447
A Comparative Study on the Influence of Biogenic and Inorganic Sulfides on the Pitting Corrosion Resistance of Different Stainless Steels in 0.5 M NaCl Neutral Aqueous Solutions P. Esparza, J. Morales, S. González and R. Salvarezza	455
Zero Resistance Ammetry - Its Application in Preventing the Corrosion of Stainless Steel in Cooling Waters D. Herbert, G.O.H. Whillock and S.E. Worthington	469
Dissolution of Copper in 1M Hydrochloric Acid at High Anodic Overvoltage E. D'Elia, O.E. Barcia, O.R. Mattos, N. Pebere and B. Tribollet	477
A Proposed Mechanism on Ni²⁺ Dissolution during Growth of Passive Films on Nickel in a Neutral Solution M. Okuyama, S. Kambe and D.L. Piron	489
Corrosion Phenomena and Shelf Life Prediction of Steel Beverage Cans with the Polarization Resistance Technique J. Dolfing	497
The Breakdown of the Passivity of Copper in Neutral Sulphate Solutions: Voltammetric and Potentiostatic Studies I.T.E. Fonseca and A.I. Correia de Sá	511

Copper Electrofaceting: Corrosion of Copper in Phosphoric Acid Aqueous Solutions R.M. Souto, M.M. Laz and S. Gonzalez	525
Effect of Manganese on the Initial Oxidation of Type 430 Stainless Steels at 1237 K I. Saeki, H. Konno and R. Furuichi	535
Behaviour of Corrosion Product Layers during Atmospheric Exposure B.M. Rosales, A. Fernández, E. Ayllón, E.N. Codaro, F.E. Varela and J.R. Vilche	543
Temperature Effects on the Passive Film of a Fe-Cr-Ni Alloy R.M. Carranza and M.G. Alvarez de Lara	551
Applications of Impedance Spectroscopy to Corrosion Research M.E. Orazem, P. Agarwal and L.H. Garcia-Rubio	563
Investigation of Chromate Layer Formation by Impedance Techniques C. Gabrielli, M. Keddad, F. Minouflet, K. Ogle and H. Perrot	573
Investigation of Corrosion Films on Zirconium Based Alloys by Electrochemical and Microscopic Methods O. Gebhardt, M. Gehringer, T. Graber and A. Hermann	587
An Electrochemical Impedance Study of the Corrosion Inhibition of a 2024 Aluminum Alloy in Neutral Chloride Solutions C. Casenave, N. Pebere and F. Dabosi	599
A Comparative EIS Study of Passive Layers Formed on Iron and Iron-Chromium Alloys E.B. Castro, J.R. Vilche and C.L.F. Oliveira	611
AC Impedance on Marine Sacrificial Anodes S.L. Erricker and J.D. Scantlebury	623
Photoelectrochemistry in Corrosion Studies: Achievements and Perspectives F. Di Quarto, S. Piazza and C. Sunseri	633
The Use of Pitting Transients to Test Microscopic Models of Localized Corrosion N.J. Laycock and R.C. Newman	649
Electrochemical Noise Measurements - A Theoretical Basis R.A. Cottis and S. Turgoose	663
Evaluation of Localized Corrosion Phenomena with Electrochemical Impedance Spectroscopy (EIS) and Electrochemical Noise Analysis (ENA) F. Mansfeld, H. Xiao and Y. Wang	673
In-Situ Imaging of Corrosion Processes D.J. Blackwood, R. Peat and A.M. Pritchard	693
Investigation of Anodic Passive Layers on Tin-Indium Alloys by Photocurrent and Electrochemical Impedance Spectroscopies G.O. Yabarra, C.A. Moina, L. Feria Hernández, F.E. Varela and J.R. Vilche	711
Electrochemical Measurements of Prerusted Steels Pretreated in H₃PO₄ Solutions M.F. Moreira de Almeida, L. Mariaca, J. Uruchurtu Chavarin and M.A. Veloz	723
Scanning Laser Enhanced Electrochemical Microscopy for Corrosion Research T. Shibata, S. Fujimoto, T. Shono, S. Udaka, T. Haruna and P.D. Green	733
Time Resolved RRDE Applied to Pitting of Fe-Cr Alloy and 304 Stainless Steel F. Huet, M. Keddad, X.R. Nóvoa and H. Takenouti	741
An EQCM Study on Corrosion of Iron Thin Film in Deaerated Neutral Solutions M. Seo, K. Yoshida and K. Noda	755
Applications of Scanning Tunneling Microscopy to Corrosion Research P. Marcus and V. Maurice	765
Contributions of Raman Spectroscopy and Electrochemical Impedance to the Understanding of the Underpaint Corrosion Process of Zinc-Coated Steel Sheets A. Hugot le Goff, M.C. Bernard, N. Phillips and H. Takenouti	779
Effect of Residual Stress on the Corrosion Properties of CO₂ Laser Surface Melted Alloys M.A. McMahon, A. Green, K.G. Watkins, W.M. Steen, M.G.S. Ferreira and R. Vilar	789
Electrochemical Behaviour and Corrosion Resistance of Sputtered W-Ti-N Coatings on Steel Substrates C.M.A. Brett and A. Cavaleiro	797
Advanced Electrochemical Techniques for Studying Repassivation Kinetics I. Efimov, M. Itagaki, M. Keddad, R. Oltra, H. Takenouti and B. Vuillemin	805

Performance of Polymeric Particulate Composites as Corrosion Protective Coatings of Steel Surfaces	
N. Kouloumbi, G.M. Tsangaris, A. Skordos, P. Karkanias and I. Kyriopoulou	813
Investigations on the Corrosion Behaviour of Ni-Co Based Metallic Glasses by Electrochemical Techniques	
L.M. Gassa, J.R. Vilche and M.R. Barbosa	825
Electrochemical Studies on Steel in Concrete	
J.M. Sykes	833
Advances in Electrochemical Impedance Measurements in Reinforced Concrete	
C. Andrade, L. Soler and X.R. Nóvoa	843
Corrosion Rate on Reinforced Concrete Structures Determined by Electrochemical Methods	
B. Elsner	857
Carbonation of Flyash-Containing Concrete: Electrochemical Studies	
M.d.F. Montemor, A.M.P. Simões, M.M. Salta and M.G.S. Ferreira	867
Influence of Rebar Surface Condition on Polarisation Resistance Measurement in Concrete Structures	
E. Proverbio and R. Cigna	877
Influence of Multiple Rebar Mats on Electrochemical Removal of Chloride from Concrete	
B.B. Hope, N.M. Ihekweba and C.M. Hansson	883
Passivation of Reinforcing Steel in Concrete	
C. Andrade, P. Merino, X.R. Nóvoa, M.C. Pérez and L. Soler	891
Galvanic Corrosion of Steel in Concrete	
M.C. Alonso, C. Andrade, J. Fariña, F. López, P. Merino and X.R. Nóvoa	899
The Influence of the Ratio [Cl-]/[OH-] on the Corrosion Rate of Reinforcing Steel in Neutral and Acid Solutions	
P. Garcés, A. Sáez, C.G. Andreu and C. Andrade	907