



# CORROSION SCIENCE

**The Journal on Environmental Degradation of Materials and its Control**

**Editor-in-Chief: G. T. BURSTEIN, University of Cambridge, U.K.**

**An Official Journal of the Institute of Corrosion**

## CONTENTS

L. SHEN, J. HE, Y. SU, W. CHU and L. QIAO	949	Stress corrosion cracking of Ni <sub>2</sub> MnGa magnetic shape memory alloy in water and moist atmosphere
Z. F. WANG, P. H. LI, Y. GUAN, Q. F. CHEN and S. K. PU	954	The corrosion resistance of ultra-low carbon bainitic steel
K. N. ALLAHAR and M. E. ORAZEM	962	On the extension of CP models to address cathodic protection under a delaminated coating
L. CÁCERES, T. VARGAS and L. HERRERA	971	Influence of pitting and iron oxide formation during corrosion of carbon steel in unbuffered NaCl solutions
Y. X. QIAO, Y. G. ZHENG, W. KE and P. C. OKAFOR	979	Electrochemical behaviour of high nitrogen stainless steel in acidic solutions
J. H. CHANG, J. M. CHOU, R. I. HSIEH and J. L. LEE	987	Corrosion behaviour of an alloy formed by inductive melting of a cobalt-based alloy and AISI 4140 steel
Y. MA, Y. LI and F. WANG	997	Corrosion of low carbon steel in atmospheric environments of different chloride content
S. K. SHUKLA and M. A. QURAISHI	1007	Cefotaxime sodium: A new and efficient corrosion inhibitor for mild steel in hydrochloric acid solution
D. RAPS, T. HACK, J. WEHR, M. L. ZHELUDKEVICH, A. C. BASTOS, M. G. S. FERREIRA and O. NYUKEN	1012	Electrochemical study of inhibitor-containing organic-inorganic hybrid coatings on AA2024
J. PURBOLAKSONO, A. KHINANI,	1022	Prediction of oxide scale growth in superheater and reheater tubes
A. Z. RASHID, A. A. ALI and N. F. NORDIN	1030	Influence of solid corrosion by-products on the consumption of dissolved oxygen in copper pipes
I. T. VARGAS, M. A. ALSINA, P. A. PASTÉN and G. E. PIZARRO	1038	The role of acid anion on the inhibition of the acidic corrosion of steel by lupine extract
A. M. ABDEL-GABER, B. A. ABD-EL-NABEY and M. SAADAWY	1043	Investigating accuracy of the Tafel extrapolation method in HCl solutions
E. POORQASEMI, O. ABOOTALEBI, M. PEIKARI and F. HAQDAR		

*Contents continued on outside back cover*

Continued from outside front cover

- J. XU, C. ZHUO, D. HAN, J. TAO, L. LIU and S. JIANG 1055 Erosion-corrosion behavior of nano-particle-reinforced Ni matrix composite alloying layer by duplex surface treatment in aqueous slurry environment
- M. SUN, X. WU, Z. ZHANG and E.-H. HAN 1069 Oxidation of 316 stainless steel in supercritical water
- M. BEHPOUR, S. M. GHOREISHI, N. SOLTANI and M. SALAVATI-NIASARI 1073 The inhibitive effect of some bis-N,S-bidentate Schiff bases on corrosion behaviour of 304 stainless steel in hydrochloric acid solution
- Y. LIU, J. LI, E. E. OGUZIE, Y. LI, D. CHEN, K. YANG and F. WANG 1083 Electrochemical corrosion behavior of a novel antibacterial stainless steel
- Y. SONG, D. SHAN, R. CHEN and E.-H. HAN 1087 Corrosion characterization of Mg-8Li alloy in NaCl solution
- E. BLASCO-TAMARIT, A. IGUAL-MUÑOZ, J. G. ANTÓN and D. M. GARCIA-GARCÍA 1095 Galvanic corrosion of titanium coupled to welded titanium in LiBr solutions at different temperatures
- M. M. HALL Jr. 1103 Critique of the Ford-Andresen film rupture model for aqueous stress corrosion cracking
- E. SAMIENTO-BUSTOS, J. G. GONZÁLEZ-RODRIGUEZ, J. URUCHURTU and V. M. SALINAS-BRAVO 1107 Corrosion behavior of iron-based alloys in the LiBr + ethylene glycol + H<sub>2</sub>O mixture
- M. LIU, S. ZANNA, H. ARDELEAN, I. FRATEUR, P. SCHMUTZ, G. SONG, A. ATRENS and P. MARCUS 1115 A first quantitative XPS study of the surface films formed, by exposure to water, on Mg and on the Mg-Al intermetallics: Al<sub>3</sub>Mg<sub>2</sub> and Mg<sub>17</sub>Al<sub>12</sub>
- P.-Y. LIN, H. ZHOU, W.-P. LI, W. LI, S.-Z. ZHAO and J.-G. SU 1128 Effect of yttrium addition on the oxide scale of AM50 magnesium alloy
- E. A. ABD EL MEGUID and N. K. AWAD 1134 Electrochemical pitting corrosion behaviour of  $\alpha$ -brass in LiBr containing solutions
- V. VENEGAS, F. CALEYO, T. BAUDIN, J. M. HALLEN and R. PENELLE 1140 Role of microtexture in the interaction and coalescence of hydrogen-induced cracks
- M. BOJINOV, K. GAONKAR, S. GHOSH, V. KAIN, K. KUMAR and T. SAARIO 1146 Characterisation of the oxide layer on carbon steel during hot conditioning of primary heat transport systems in heavy-water reactors
- M. CIEŚLIK, W. RECZYŃSKI, A. M. JANUS, K. ENGVALL, R. P. SOCHA and A. KOTARBA 1157 Metal release and formation of surface precipitate at stainless steel grade 316 and Hanks solution interface – Inflammatory response and surface finishing effects
- A. GEBERT, S. ROTH, S. OSWALD and L. SCHULTZ 1163 Passivity of polycrystalline NiMnGa alloys for magnetic shape memory applications
- S. MATTHEWS, B. JAMES and M. HYLAND 1172 The role of microstructure in the high temperature oxidation mechanism of Cr<sub>3</sub>C<sub>2</sub>-NiCr composite coatings
- J. K. LIN and J. Y. UAN 1181 Formation of Mg,Al-hydrotalcite conversion coating on Mg alloy in aqueous HCO<sub>3</sub><sup>-</sup>/CO<sub>3</sub><sup>2-</sup> and corresponding protection against corrosion by the coating
- T. DUDZIAK, H. L. DU, P. K. DATTA, A. WILSON, I. M. ROSS, M. MOSER and R. BRAUN 1189 Sulphidation/oxidation behaviour of TiAlCr and Al<sub>2</sub>Au coated Ti45Al8Nb alloy at 750 °C
- J. CHEN, M. AI, J. WANG, E.-H. HAN and W. KE 1197 Formation of hydrogen blister on AZ91 magnesium alloy during cathodic charging

#### I Corrosion diary

Indexed/Abstracted in Current Contents, Engng Ind Monthly & Author Index, PASCAL/CNRS Database, Corrosion Abstracts, Metals Abstracts, Chemical Abstracts, INSPEC Database, BMT Abstracts, Petroleum Abstracts, Aqua Abstr, Cam Sci Abstr, Chem Eng Abstr, Chem Haz in Indus, Edi Metal Abstr, Environ Per Bibl, Materials Science Citation Index, Applied Science & Technology Index, Wilson Applied Science & Technology Abstracts, Current Technology Index (CTI). Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®.

Available online at



[www.sciencedirect.com](http://www.sciencedirect.com)



0010-938X(200905)51:5;1-8