Journal of Nuclear Materials 379 (2008) vii



Contents lists available at ScienceDirect

## Journal of Nuclear Materials

journal homepage: www.elsevier.com/locate/jnucmat

ix

1

9

16

24

33

42

48

54

59

68

80

91

Contents



## Proceedings of the Third International Workshop on Long-Term **Prediction of Corrosion Damage in Nuclear Waste Systems**

Preface .....

- Overview of European concepts for high-level waste and spent fuel disposal with special reference waste container corrosion, D.G. Bennett and R. Gens
- The effect of the evolution of environmental conditions on the corrosion evolutionary path in a repository for spent fuel and high-level waste in Opalinus Clay, L. Johnson and F. King
- Corrosion issues in nuclear waste disposal, D. Féron, D. Crusset and J.-M. Gras
- On the tenuous nature of passivity and its role in the isolation of HLNW, D.D. Macdonald
- Understanding long-term corrosion of Alloy 22 container in the potential Yucca Mountain repository for high-level nuclear waste disposal, T. Ahn, H. Jung, X. He and O. Pensado
- Stress corrosion cracking of stainless-steel canister for concrete cask storage of spent fuel, J.-i. Tani, M. Mayuzumi and N. Hara
- A mathematical model for crevice corrosion under porous deposits, G.R. Engelhard, L.G. McMillion and D.D. Macdonald
- The passivity of Type 316L stainless steel in borate buffer solution, I. Nicic and D.D. Macdonald
- Yucca Mountain engineered barrier system corrosion model (EBSCOM), F. King, M. Kolar, J.H. Kessler and M. Apted
- Kohonen mapping of the crack growth under fatigue loading conditions of stainless steels in BWR environments and of nickel alloys in PWR environments, M. Urquidi-Macdonald
- Corrosion of iron and low alloyed steel within a water saturated brick of clay under anaerobic deep geological disposal conditions: An integrated experiment, F.A. Martin, C. Bataillon and M.L. Schlegel
- Methodology to make a robust estimation of the carbon steel overpack lifetime with respect to the Belgian Supercontainer design, B. Kursten and F. Druyts

The effect of radiation on the anaerodic corrosion of steel, N.K. Smart,	
A.P. Rance and L.O. Werme	97
Study of archaeological artefacts to refine the model of iron	
long-term indoor atmospheric corrosion, J. Monnier, L. Legrand,	
L. Bellot-Gurlet, E. Foy, S. Reguer, E. Rocca, P. Dillmann, D. Neff,	
F. Mirambet, S. Perrin and I. Guillot	105
Long term stability of iron for more than 1500 years indicated by	
archaeological samples from the Yamato 6th tumulus,	
H. Yoshikawa, E. Gunji and M. Tokuda	112
Long-term corrosion behaviour of low-carbon steel in anoxic	
environment: Characterisation of archaeological artefacts,	
M. Saheb, D. Neff, Ph. Dillmann, H. Matthiesen and E. Foy	118
Corrosion behaviour of reinforced concrete: Laboratory experiments	
and archaeological analogues for long-term predictive modelling,	
V. L'Hostis, F. Foct and P. Dillmann	124
Reactive-transport model for the prediction of the uniform corrosion	
behaviour of copper used fuel containers, F. King, M. Kolar and	
P. Maak	133
The Swedish nuclear waste program and the long-term corrosion	
behaviour of copper, B. Rosborg and L. Werme	142
Influence of sulfide concentration on the corrosion behavior of pure	
copper in synthetic seawater, N. Taniguchi and M. Kawasaki	154
Electrochemical impedance spectroscopic study of passive zirco-	
nium, J. Ai, Y. Chen, M. Urquidi-Macdonald and D.D. Macdonald	162
Failure model and Monte Carlo simulations for titanium (grade-7)	
drip shields under Yucca Mountain repository conditions, Z. Qin	
and D.W. Shoesmith	169
The long-term behaviors of passivation and hydride layer of	
commercial grade pure titanium in TRU waste disposal environ-	
ments, G. Nakayama, Y. Sakakibara, Y. Taniyama, H. Cho, T. Jintoku,	
S. Kawakami and M. Takemoto	174