

---

# **High Temperature Corrosion and Materials Chemistry 11**

---

**Editors:**

**E. Opila**  
**J. Fergus**  
**P. Gannon**  
**T. Markus**  
**T. Maruyama**  
**E. Wuchina**

**Sponsoring Divisions:****High Temperature Materials****Corrosion**

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](http://www.electrochem.org)

**ecst<sup>TM</sup>transactions****Vol. 66, No. 18**

---

Copyright 2015 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](mailto:ecs@electrochem.org)  
Web: [www.electrochem.org](http://www.electrochem.org)

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

ISBN 978-1-62332-283-0 (Soft Cover)  
ISBN 978-1-60768-641-5 (PDF)

Printed in the United States of America.

---

**ECS Transactions, Volume 66, Issue 18**  
High Temperature Corrosion and Materials Chemistry 11

**Table of Contents**

|  |            |
|--|------------|
| Preface  | <i>iii</i> |
| Scaling Kinetics and Scale Microstructure of Chromia Scales Formed on Ni-25%Cr Model Alloy during Oxidation in H <sub>2</sub> O-Containing High and Low <i>pO</i> <sub>2</sub> Test Gas at 1000°C<br><i>M. Hänsel, V. Shemet, E. Turan, I. Kijatkin, D. Simon, B. Gorr, H. J. Christ</i> | 1          |
| Effect of Sulphur on Fe-20Cr-(Mn, Si) and Fe-20Ni-20Cr-(Mn, Si) Corrosion in CO <sub>2</sub> -H <sub>2</sub> O at 650°C<br><i>C. Yu, T. D. Nguyen, J. Zhang, D. J. Young</i>   | 23         |
| The Time and Temperature Dependence of AISI 316L Corrosion in Chlorosilane Environments<br><i>J. L. Aller, K. Ellingwood, B. Clark, P. E. Gannon</i>   | 41         |
| Function of Reaction Layer in Pyrochlore Thermal Barrier Coatings against CMAS Corrosion<br><i>H. Wang, Z. Sheng, E. Tarwater, X. Zhang, J. W. Fergus</i>  | 53         |
| Author Index   | 61         |