

1. Record Nr.	UNINA9910465322403321
Autore	Chevalier Sebastien
Titolo	French activity on high temperature corrosion in water vapor // Sebastien Chevalier and Jerome Favergeon
Pubbl/distr/stampa	[Zurich, Switzerland] : , : Trans Tech Publications, , [2014] ©[2014]
ISBN	3-03826-382-6
Descrizione fisica	1 online resource (196 p.)
Collana	Materials Science Foundations ; ; Volume 76
Disciplina	620.1623
Soggetti	Metals - Effect of high temperatures on Corrosion and anti-corrosives Corrosion and anti-corrosives - Computer simulation Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	French Activity on High Temperature Corrosion in Water Vapor; Preface, Introduction, List of Laboratories and Acknowledgement; Table of Contents; CHAPTER 1 Influence of Water Vapor on High-Temperature Oxidation of Chromia-Forming Materials; 1. Introduction 2. Hydrogen-Induced Defects in Chromia; 3. Electrical Conductivity of Scales Grown in H <sub>2</sub> O; 4. Oxidation Kinetics in H <sub>2</sub> O-Containing Atmospheres; 5. Chromium Volatilization; 6. Mechanical Properties of Scales Grown in H <sub>2</sub> O; 7. Influence of Water Vapor in High Temperature Reactors; 8. Conclusions and Perspectives CHAPTER 2 Influence of Water Vapor on High-Temperature Oxidation of Alumina-Forming Materials 1. Introduction. 2. State of the Art.; 3. Effects of Water Vapor on FeCrAl Materials.; 4. Effects of Water Vapor in Fe <sub>3</sub> Al Materials.; 5. Influence of Water Vapor in Aeronautical Engines (Coatings and Superalloys); 6. Conclusions and Perspectives; CHAPTER 3 Influence of Water Vapor on High-Temperature Oxidation of Steels and Cast Iron; 1. Introduction. 2. Materials and Symbols; 3. Effect of Water Vapor and Steam on P91 Oxidation; 4. Influence of Water Vapor on the Damage of Iron Oxide Scales Under 5. Case Studies CHAPTER 4 Influence of Water Vapor on High-

Temperature Oxidation of Titanium and Zirconium and their Alloys; 1. Introduction 2. State of the Art; 3. Influence of Water Vapor on Titanium Oxidation; 4. Effect of Steam Pressure on the Corrosion Resistance of Zirconium-Based Materials; 5. Effects of Wet-Air Radiolysis on Oxidized Zircaloy-4; 6. Study of High-Temperature Oxidation of Zirconium in Water Vapor: Impact on Mechanical Properties; 7. Conclusion; CHAPTER 5 Tools for Studying Water Vapor at High Temperatures; 1. Kinetics and Oxidation Mechanisms; 2. Characterization 3. Modeling and Numerical Simulations

---

Sommario/riassunto

Increased clarity in our understanding of water vapor effects on oxidation is resulting from our recognition that multiple mechanisms are possible, and that distinctions must be drawn between situations where, on the one hand, molecular oxygen accompanies water vapor, and on the other, it does not, and instead free hydrogen can be present. It is a pleasure to welcome the contributions of this new book to this important field. Whilst the existence of a substantial French research effort in the area has been well known, the scale and extent of the effort comes as something of a surprise. The rea

---