

**FATIGUE AND FRACTURE BEHAVIOR
OF HIGH TEMPERATURE MATERIALS**

Edited by
Peter K. Liaw

FATIGUE AND FRACTURE BEHAVIOR OF HIGH TEMPERATURE MATERIALS

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TABLE OF CONTENTS

| | |
|--|-----|
| Preface | vii |
| Mechanisms of High-Temperature Fatigue and Fracture in Silicon Carbide Ceramics <i>D. Chen, X.F. Zhang, and R.O. Ritchie</i> | 1 |
| High Frequency Fatigue Crack Propagation in the Nickel-base Superalloy KM4 at High Temperatures <i>A. Shyam, S.A. Padula, and W.W. Milligan</i> | 9 |
| Fracture and Fatigue-Crack Growth Behavior in Mo-12Si-8.5B Intermetallics at Ambient and Elevated Temperatures <i>H. Choe, D. Chen, J.H. Schneibel, and R.O. Ritchie</i> | 17 |
| Temperature Evolution and Fatigue Damage of Reactor Pressure Vessel (RPV) Steels <i>B. Yang, P.K. Liaw, H. Wang, L. Jiang, J.Y. Huang, R.C. Kuo, and J.G. Huang</i> | 25 |
| Effect of Frequency and Specimen Self-Heating on the Fatigue Life of Type 316 LN Stainless Steel <i>H. Tian, P.K. Liaw, D. Fielden, L. Jiang, B. Yang, C.R. Brooks, D.D. Bruns, M.D. Brotherton, H. Wang, J.P. Strizak, L.K. Mansur, J.R. DiStefano, K. Farrell, D.C. Lousteau, S.J. Pawel, and G.T. Yahr</i> | 37 |
| An Investigation of the Effects of Temperature on Fatigue Crack Growth in Cast Lamellar™ XD Gamma Alloy <i>J. Lou, C. Mercer, and W.O. Soboyejo</i> | 41 |
| An Investigation of the Effects of Loading Rate on Resistance-Curve Behavior and Toughening in Cast Lamellar XD™ Gamma Alloys <i>J. Lou, and W.O. Soboyejo</i> | 49 |
| Damage Assessment of Ceramic Matrix Composites by Nondestructive Evaluation Techniques <i>J. Kim, P.K. Liaw, H. Wang, and Y.T. Lee</i> | 59 |
| High-Temperature Cyclic Fatigue-Crack Growth in Monolithic Ti ₃ SiC ₂ Ceramics <i>K. Shirato, D. Chen, M.W. Barsoum, T. El-Raghy, and R.O. Ritchie</i> | 71 |

| | |
|--|----|
| Low-Cycle Fatigue of Ultimet [®] Alloy <i>L. Jiang, P.K. Liaw, C.R. Brooks, J. Strader, D.L. Klarstrom, and T. Jiang</i> | 77 |
| Influence of Hold Time and Temperature on Low-Cycle Fatigue Behavior of Cobalt- Based Superalloy Haynes [®] 188 <i>L.J. Chen, P.K. Liaw, Y.H. He, M.L. Benson, J.W. Blust, P.F. Browning, R.R. Seeley, and D.L. Klarstrom</i> | 85 |
| Orientation Dependence of Directional Coarsening in a Single Crystal Nickel-Base Superalloy <i>Y.B. Xu, Y.H. Sha, J.H. Zhang, and Z.Q. Hu</i> | 95 |
| In-Situ TEM Observation of Crack Propagation in a Single Crystal Ni ₃ Al <i>Y.B. Xu, Z.W. Shan, and L. Liu</i> | 97 |
| Author Index | 99 |

PREFACE

This book is a collection of papers presented at a symposium on “Fatigue and Fracture Behavior of High-Temperature Materials,” sponsored by the Mechanical Behavior of Materials Committee of The Minerals, Metals & Materials Society (TMS) and The American Society of Metal (ASM). The symposium took place at the 2000 TMS Fall Meeting, October 8-12, St. Louis, Missouri.

The objective of the symposium was to develop a fundamental understanding of fatigue and fracture behavior of high-temperature materials including intermetallics, superalloys, and metal-matrix and ceramic-matrix composites.

The theme of the symposium covered:

1. Mechanistic understanding of fatigue behavior
2. Mechanistic understanding of fracture characteristics
3. Investigations of fatigue and fracture mechanisms and damage assessment
4. Fatigue crack initiation and growth mechanisms
5. Effects of temperature, interface, loading, processing, and microstructure
6. Life prediction methodology
7. Modeling of fatigue and fracture behavior

The meeting attracted researchers and audience from universities, industry, and government agencies in and outside the United States. We were very much encouraged by the turnout of the participants whose interest in the research of fatigue and fracture behavior of high-temperature materials was immense. Vigorous discussion and technical interchanges among the participants highlighted this symposium.

The symposium chairmen were Prof. W. W. Milligan, Michigan Technological University, Prof. R. O. Ritchie, University of California, Berkeley, Prof. W. O. Soboyejo, Princeton University, and Prof. P. K. Liaw, University of Tennessee, Knoxville.

We would like to thank all of the participants for the success of the symposium, and the authors for their excellent contributions to the book. We are confident that this book will provide invaluable reference information for the research on “Fatigue and Fracture Behavior of High-Temperature Materials.” It is our belief that only through the vigorous research and understanding on “Fatigue and Fracture Behavior of High-Temperature Materials,” the engineering applications of high-temperature materials can then be widened.

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AUTHOR INDEX

B

Barsoum, M.W., 71
Benson, M.L., 85
Blust, J.W., 85
Brooks, C.R., 37, 77
Brotherton, M.D., 37
Browning, P.F., 85
Bruns, D.D., 37

C

Chen, D., 1, 17, 71
Chen, L.J., 85
Choe, H., 17

D

DiStefano, J.R., 37

E

El-Ragy, T., 71

F

Farrell, K., 37
Fielden, D., 37

H

He, Y.H., 85
Hu, Z.Q., 95
Huang, J.G., 25
Huang, J.Y., 25

J

Jiang, L., 25, 37, 77
Jiang, T., 77

K

Kim, J., 59
Klarstrom, D.L., 77, 85
Kuo, R.C., 25

L

Lee, Y.T., 59
Liaw, P.K., 25, 37, 59, 77, 85

Liu, L., 97
Lou, J., 41, 49
Lousteau, D.C., 37

M

Mansur, L.K., 37
Mercer, C., 41
Milligan, W.W., 9

P

Padula, S.A., 9
Pawel, S.J., 37

R

Ritchie, R.O., 1, 17, 71

S

Schneibel, J.H., 17
Seeley, R.R., 85
Sha, Y.H., 95
Shan, Z.W., 97
Shirato, K., 71
Shyam, A., 9
Soboyejo, W.O., 41, 49
Strader, J., 77
Strizak, J.P., 37

T

Tian, H., 37

W

Wang, H., 25, 37, 59

X

Xu, Y.B., 95, 97

Y

Yahr, G.T., 37
Yang, B., 25, 37

Z

Zhang, J.H., 95
Zhang, X.F., 1