

CONTENTS OF VOLUME 1

CONTENTS OF VOLUME 2	xiii
PREFACE	xxi
INVITED PAPERS	
Materials aspects of crack tip yielding and subcritical crack growth in engineering alloys J. Lankford	3
Modern manufacturing and performance concepts of composite materials (abstract only) G. Lubin	31
Comparison between experimental and theoretical forming limit diagrams A. Melander	33
Limits to formability in rate-sensitive metal sheets A. Needleman and V. Tvergaard	51
Constrained grain boundary cavitation in a creeping body containing a macroscopic crack H. Riedel	67
High temperature deformation and failure of welded joints J. A. Williams	79
Simplified design procedures for composite materials S. W. Tsai	103
Mechanical properties of structural materials at low temperatures with reference to the type of stressed state and mode of loading G. S. Pisarenko, A. A. Lebedev and V. A. Strizhalo	115

Factors affecting plastic instability and sheet formability S. S. Hecker	129
---	-----

THEME I: High Temperature Deformation and Failure

Constitutive laws of 316 stainless steel in high temperature creep by biaxial experiments P. Delobelle, C. Oytana and A. Mermet	141
Constitutive relationships for creep-fatigue in high-temperature materials A. Berkovits and S. Nadiv	149
High temperature low cycle fatigue of two austenitic stainless steels — a comparison between mechanical properties and microstructure J-O. Nilsson	157
Creep modeling of textured zircaloy under biaxial stressing B. L. Adams and K. L. Murty	165
Thermal fatigue test by direct passage method of large electric current on stainless steels K. Kamachi, N. Tani, T. Ishida, M. Kawano and T. Kuhoori	175
The predictive capability of three high temperature low cycle fatigue models in the alloy IN-738 M. Y. Nazmy and C. Wüthrich	183
Reheat cracking during stress relief annealing — a numerical approach L. Josefson	191
Influence of prestress on the yield surface of the cast nickel superalloy Mar-M002 at elevated temperature M. R. Winstone	199
Fatigue crack propagation in stainless steel subjected to repeated thermal shock M. Shimizu, M. W. Brown and K. J. Miller	207
A study of creep behavior of welded joint K. Satoh and M. Toyoda	215

Contents

vii

Effect of cyclic strain on cumulative fatigue damage of type 304 stainless steel at high temperature H. L. Nguyen and T. Bui-Quoc	223
The effects of the wavy grain boundaries on the creep fracture behavior in UDIMET-700 alloy G. Guo, H. Shen and Q. Cai	231
The non-isothermal fatigue tests and analysis K. Bohatec, C. Budac and J. Zdarek	239
Thermal fatigue behaviour of Mar-M509 superalloy F. Rezai-Aria, L. Rémy, C. Herman and B. Dambrine	247
Thermal fatigue of a thermally unstable alloy G. Cailletaud, J. P. Culie and H. Kaczmarek	255
Oxide wedging effects on near threshold fatigue crack growth at elevated temperature (abstract only) R. Yuuki, H. Kitagawa and Y. Miki	263
Creep in welded joints in ferritic and martensitic steels B. Ivarsson	265
Thermal stresses, plate motion and hot cracking in butt-welding M. Jonsson, L. Karlsson and L-E. Lindgren	273
Relative importance of initiation and propagation phases on the high temperature low cycle fatigue behaviour of a nickel superalloy V. T. A. Antunes	281
Influence of state of stress on creep failure of 2 $\frac{1}{4}$ % Cr 1 % Mo steel K. D. Al-Faddagh, G. A. Webster and B. F. Dyson	289
The use of fracture mechanics approach to evaluate the reliability of a nozzle weld assembly in power plant vessels (abstract only) I. V. Gorynin, V. A. Ignatov and B. T. Timofeyev	297
The effect of ordering on the high temperature deformation of nickel based alloys A. Marucco and B. Nath	299

Influence of grain orientations on the mechanical properties and fracture characteristics in a directionally solidified superalloy M. Yan, G. Zhang and H. Ni	307
Influence of cyclic loading on crack growth of a $\frac{1}{2}\%$ Cr $\frac{1}{2}\%$ Mo $\frac{1}{4}\%$ V steel D. J. Smith and G. A. Webster	315
Damage mechanics applied to high temperature fatigue A. Plumtree and J. Lemaître	323
Generalization of Mindlin's kinematical plate theory for anisotropic materials E. E. El-Soaly	331
Experimental creep mechanism maps for metals G. Malakondaiah and P. Rama Rao	337
The influence of multiaxiality of stress and environmental induced degradation on the creep behaviour of alloy 800H tubular components R. C. Hurst	345
THEME II: Mechanical Properties of Surface Coated Materials	
On the contact fatigue resistance of the cobalt alloy coating and its micromechanisms F. Wang, C. Tsi and Y. Chang	355
Tribological characteristics of steel 20Cr2Ni4 after complex thermochemical treatment T. C. Gao and T. C. Lei	363
Synthesis and testing of foam-filled FRP shell for static crushing and impact K. A. Jacob and J. Jayaraman	369
Fretting in electrical contacts M. Braunović	377
Comparing the abrasive and erosive resistance of some flame sprayed coatings and nitrided steel surfaces U. Bryggman and S. Hogmark	385

The surface layer fatigue failure of heat-resisting steels at high temperature and the protective effect of alloy coatings	393
Z. Wu, B. Wang, D. Jin, M. Xie, X. Liu and S. Lu	
Creep properties of electron beam evaporated Ni-Al ₂ O ₃ condensates (abstract only)	399
B. E. Jacobson	
Diffusion barriers used to improve structural stability and mechanical properties of W fibre-Ni matrix composites at elevated temperatures	401
R. Ahlroth and P. Kettunen	
Mechanical properties of plasma sprayed and post-treated FeCrAlY-coatings	409
C. Burman and T. Ericsson	
The cavitation erosion of coated and surface treated steels	421
A. Barletta and A. Ball	
THEME III: Design with Fibre Reinforced (Composite) Materials	
A correlation between fracture energy and fracture morphology in mixed-mode fracture of composites	431
H. T. Hahn and T. Johannesson	
Optimum design of laminated plates with fibre reinforced (composite) materials (abstract only)	439
Y. Jiang and Y.-C. Chiang	
Mechanical properties of bamboo-mesh reinforced cement composites	443
M. A. Mansur and M. A. Aziz	
The influence of microstructure on composite strengthening	451
R. J. Arsenault and R. M. Fisher	
Microstress redistribution in fibre-reinforced composites due to time-dependent processes	457
V. Kafka	
Material design of fibrous laminated composites with required flexural stiffness	465
M. Miki	

Influence of matrix resin on ultimate strength of unidirectional CFRP Y. Miyano, M. Kanemitsu, T. Kunio and M. Miki	473
Effect of fiber orientation on stable crack growth in FRP T. Kunio, M. Shimizu and S. Sohmiya	481
Nondestructive evaluation of composite materials — a design philosophy J. C. Duke, Jr., E. G. Henneke, II, W. W. Stinchcomb and K. L. Reifsneider	489
Creep behaviour of reinforced and non-reinforced resins M. W. Darlington and A. T. Marques	497
Interfacial failure in steel fiber reinforced polystyrene impregnated mortar T. Ertürk and M. Tokyay	507
The effect of extreme temperatures on the elastic properties and fracture behavior of graphite/polyimide composites D. H. Morris and R. A. Simonds	517
Deformation and failure of thin-walled filament wound GRP tubes subjected to transverse indentation M. G. Bader, R. P. Harrison and M. J. Hinton	525
Reliability-based fatigue-proof design of composite materials (extended abstract only) H. Ishikawa, A. Tsurui, T. Tanimoto and H. Kimura	533
Residual strength degradation model for glass/polyester laminates under repeated tension and compression loadings T. Tanimoto, H. Ishikawa, S. Amijima and H. Kimura	539
On the use of the three point bend and compact tension specimens to measure fracture toughness of composite laminates C. E. Harris and D. H. Morris	549
Acoustic emission from filament wound pipes under long-term loading conditions L. Gołaski, D. Hull and M. Kumosa	557

<i>Contents</i>	xi
A study on interlaminar shear strength of composites S. Zhang	565
Toughness of thin slabs under flexural or impact loading N. I. Fattuhi	573
Measurement of interfacial shear strength in graphite fiber/aluminum matrix composites V. Provenzano, R. J. Weimer and S. C. Sanday	581
Mechanical behavior of a short fiber composite G. Tolf	587
Delamination and transverse fracture in graphite/ epoxy materials W. L. Bradley and R. N. Cohen	595