

- Overview p. vii
- Section I Thermomechanical Deformation Behavior and Modeling
  - Modeling Thermomechanical Cyclic Deformation by Evolution of its Activation Energy X. J. Wu and S. Yandt and P. Au and J.-P. Immarigeon p. 3
  - Modeling of Deformation during TMF-Loading E. E. Affeldt and J. Hammer and L. Cerdan de la Cruz p. 15
  - Modelling of Hysteresis Loops During Thermomechanical Fatigue R. Sandstrom and H. C. M. Andersson p. 31
  - Cyclic Behavior of Al319-T7B Under Isothermal and Non-Isothermal Conditions C. C. Engler-Pinto, Jr. and H. Sehitoglu and H. J. Maier p. 45
  - Cyclic Deformation Behavior of Haynes 188 Superalloy Under Axial-Torsional, Thermomechanical Loading P. J. Bonacuse and S. Kalluri p. 65
- Section II Damage Mechanisms under Thermomechanical Fatigue
  - Damage and Failure Mechanisms of Thermal Barrier Coatings Under Thermomechanical Fatigue Loadings E. Tzimas and P. Hahner and P. Moretto and S. D. Peteves and J. Bressers p. 83
  - Thermo-mechanical Creep-Fatigue of Coated Systems L. Remy and A. M. Alam and A. Bickard p. 98
  - Enhancement of Thermo-Mechanical Fatigue Resistance of a Monocrystalline Nickel-Base Superalloy by Pre-Rafting F. C. Neuner and U. Tetzlaff and H. Mughrabi p. 112
  - Environmental Effects on the Isothermal and Thermomechanical Fatigue Behavior of a Near-[gamma] Titanium Aluminide H. J. Maier and F. O. R. Fischer and H.-J. Christ p. 127
- Section III Thermomechanical Fatigue Behavior and Cyclic Life Prediction
  - Using Fracture Mechanics Concepts for a Mechanism-Based Prediction of Thermomechanical Fatigue Life H.-J. Christ and R. Teteruk and A. Jung and H. J. Maier p. 145
  - Thermomechanical Fatigue Behavior of an Aluminide-Coated Monocrystalline Ni-Base Superalloy F. Grube and E. E. Affeldt and H. Mughrabi p. 164
  - Collaborative Research on Thermo-Mechanical and Isothermal Low-Cycle Fatigue Strength of Ni-Base Superalloys and Protective Coatings at Elevated Temperatures in The Society of Materials Science, Japan (JSMS) M. Okazaki and K. Take and K. Kakehi and Y. Yamazaki and M. Sakane and M. Arai and S. Sakurai and H. Kaneko and Y. Harada and Y. Sugita and T. Okuda and I. Nonaka and K. Fujiyama and K. Nanba p. 180
  - The Fatigue Behavior of NiCr22Co12Mo9 Under Low-Frequency Thermal-Mechanical Loading and Superimposed Higher-Frequency Mechanical Loading M. Moalla and K.-H. Lang and D. Lohe p. 195
  - Thermomechanical Response of Single Crystal Nickel-Base Superalloy CM186SX C. N. Kong and C. K. Bullough and D. J. Smith p. 210
  - Thermomechanical Fatigue Behavior of Stainless Steel Grades for Automotive Exhaust Manifold Applications P.-O. Santacreu and C. Simon and A. Coleman p. 227
  - Thermomechanical Fatigue Analysis of Cast Aluminum Engine Components X. Su and M. Zubeck and J. Lasecki and H. Sehitoglu and C. C. Engler-Pinto, Jr. and C.-Y. Tang and J. E. Allison p. 240
- Section IV Experimental Techniques for Thermomechanical Testing

- Acoustic Emission Analysis of Damage Accumulation During Thermal and Mechanical Loading of Coated Ni-Base Superalloys Y. Vougiouklakis and P. Hahner and F. de Haan and V. Stamos and S. D. Peteves p. 255
- Miniature Thermomechanical Ramping Tests for Accelerated Material Discrimination B. Roebuck and M. G. Gee and A. Gant and M. S. Loveday p. 270
- Improving the Reproducibility and Control Accuracy of TMF Experiments with High Temperature Transients T. Brendel and M. Naderhirn and L. Del Re and C. Schwaminger p. 282
- Two Specimen Complex Thermal-Mechanical Fatigue Tests on the Austenitic Stainless Steel AISI 316 L K. Rau and T. Beck and D. Lohe p. 297
- Analysis of Thermal Gradients during Cyclic Thermal Loading under High Heating Rates E. E. Affeldt and J. Hammer and U. Huber and H. Lundblad p. 312