

1. Record Nr.	UNINA9910845095103321
Autore	Li Longbiao
Titolo	Micromechanics of Ceramic-Matrix Composites at Elevated Temperatures // by Longbiao Li
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	9789819712946 9819712947
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (139 pages)
Collana	Advanced Ceramics and Composites, , 2662-9313 ; ; 6
Disciplina	620.118
Soggetti	Composite materials Materials - Analysis Mechanics, Applied Solids Ceramic materials Aerospace engineering Astronautics Composites Characterization and Analytical Technique Solid Mechanics Ceramics Aerospace Technology and Astronautics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Micromechanics Stress-Strain Behavior of Ceramic-Matrix Composites under Monotonic Tensile Loading at Room and Elevated Temperatures -- Micromechanics Proportional Limit Stress of Ceramic-Matrix Composites under Monotonic Tensile Loading at Elevated Temperatures -- Micromechanics Residual Strength of Ceramic-Matrix Composites under Cyclic Fatigue Loading at Elevated Temperatures -- Micromechanics Mechanical Hysteresis of Ceramic-Matrix Composites under Cyclic Fatigue at Elevated Temperature -- Micromechanics Interface Damage of Ceramic-Matrix Composites under Cyclic Fatigue at Elevated Temperature -- Micromechanics

**Lifetime of Ceramic-Matrix Composites under Cyclic Fatigue Loading at Elevated Temperatures -- Micromechanics Strain Response of Ceramic-Matrix Composites under Creep Loading at Elevated Temperature -- Micromechanics Strain Response of Ceramic-Matrix Composites under Creep-Fatigue Loading at Elevated Temperature.**

**Sommario/riassunto**

Ceramic-matrix composites (CMCs) possess high specific strength and modulus at elevated temperature, and have already been applied in hot-section components in aero-engines. To ensure the operation reliability and safety of CMCs components, it is necessary to understand the micro damage mechanisms and internal damage state in the composites. This book focuses on the micromechanics of CMCs at elevated temperatures, including the stress-strain behavior, proportional limit stress, residual strength, mechanical hysteresis, interface damage, strain response, and lifetime of CMCs at elevated temperatures. This book can help the material scientists and engineering designers to better understand and master the micromechanics of CMCs at elevated temperatures.