



Mechanics of a Functionally-Graded Titanium Matrix Composite

By G. Miller

Biblioscholar Okt 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x7 mm. This item is printed on demand - Print on Demand Neuware - Functionally-graded Titanium Matrix Composites (F/G TMCs) combine the ideal properties of titanium matrix composites with the more practical machining qualities of monolithic (unreinforced) alloy. This material shows great promise in application to aerospace structural components - even in parts whose design requirements have defied the use of composite materials in the past. Successful implementation of such a material would lead to enhanced aircraft performance. However, the basic properties of a functionally-graded titanium matrix composite need to be investigated. The composite/alloy transition region, or joint area, may be less strong than its constituents and therefore determine the overall performance of the material. Therefore, this work studied the properties (modulus of elasticity, failure strength) and mechanical behavior (fatigue and deformation failure mechanisms) of the joint area as the first step in further testing and future evaluation of this material. The scope of this effort involved tension and fatigue testing. The results of this study found that the transition region was more robust than expected: the joint area shows a combination of the properties for the parent materials and is nearly...



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