

우주항공용 탄소/에폭시 복합재료의 기계적 특성 평가에 관한 고찰  
A Study on the Mechanical Property Evaluation of Carbon/Epoxy Composite  
Material for Aerospace Application

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This paper presents the work performed in a program developing composite material which properties satisfy structural and thermal requirements for aircrafts and spacecrafts. In the aerospace vehicle structures, the specific strength of the materials is one of the important requirements and this is why polymer matrix composite material with reinforced carbon fiber is widely used. However, the mechanical properties of the composite material have been known to be dependent on processing and this difficulties in evaluation have caused a lot of mechanical tests for each batch.

The purpose of this study was to develop composite material design allowables based on statistical analysis to fulfill the strict aerospace requirements. In this study, mechanical properties of carbon fiber reinforced composite for high temperature application were obtained for 3 batches and analyzed so that the material design allowables were determined. The results include comparison of mechanical properties among 4 different environmental conditions, which are cold temperature/dry, room temperature/dry, elevated temperature/dry, and elevated temperature/wet. It has been shown that the evaluation methodology has been successfully demonstrated to determine the material design allowables of the composite material and the mechanical properties developed are currently utilized for Korea Satellite Launch Vehicle structure.