

## **Research for Design and Fabrication of a Hybrid Composite Material with Epoxy Resin and Carbon Fiber for High Temperature Aerospace Applications, Protected with a Ceramic Coating Barrier.**

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In the Aerospace field, the use of composite are very common nowadays especially the use of carbon fiber reinforcement polymers, because is a very light weight material and have goods mechanical properties, like a high tensile strength, but one of the mayor problems of the use of this material is the low temperature of service that is around the 175 C, and for the use in the space, we need a high temperature of service, this is why we suggested the use of a thermal barrier.

In this research, are presented de investigation for the development of a hybrid composite material for a high temperature service above the 300 C, we select a thermal coating barrier of ceramic, with a flame spray process. We are going to characterize and test the material with different mechanical and thermal testing, like tensile, flexure, impact, DTA, etc.

This work is for develop materials for the CANSAT and the aerospace missions that in my university are been doing for the UNISEC program. We also create in the university a group of teachers and students that are working in research, in the field of aerospace for this program, in this group also we are been working in the CANSAT and we started the group that are researching and development the launch system for the CANSAT and also for the space mission. Other important thing that we are been doing are presentations about this program to other students in this university and also to others students of the north region of Mexico.