

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Advanced Materials and Structures for High Temperature Applications (4)

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THE IMPLEMENTATION OF THE ALGINATE MONTMORILLONITE NANOCOMPOSITE FOAM
INTO HEAT SHIELDS

Abstract

The alginate montmorillonite (Alg-MMT) nanocomposite is a promising material for use in heat shields within space flight. The primary focus lies on implementation in thermal protection on sounding rockets. The material can be produced as foams, which have a high thermal resistance. Before considering their implementation in heat shields, it is important to determine other mechanical properties as well. The aim of this study is to research whether the Alg-MMT nanocomposite foam is suitable for implementation in a heat shield for sounding rockets. Foams with varying densities as well as different configurations of sandwich structures are produced and evaluated. In order to get an insight into the mechanical behaviour of the foams and sandwich structures, double lap shear tests and three-point bending tests are performed. The collected mechanical properties indicate that select configurations implementing the Alg-MMT foam can be used in a heat shield.