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ABSTRACT

In view of spacecraft re-entry applications into planetary atmospheres, hybrid thermal protection systems based on cork and ceramic matrix composites are investigated. Joints of NORCOAT LIÈGE cork with C/C-SiC ceramic matrix composite were fabricated using a) high temperature commercial inorganic adhesives and b) *in-situ* polymerization of the cork on top of the CMC. Mechanical shear tests under ambient conditions and in liquid nitrogen are carried out. The ultimate shear strength of all the adhesive joints at room temperature varies between 0. 52 and 0.78 MPa and is similar to that of the *in-situ* joints. At liquid nitrogen temperature the shear strength is enhanced by up to 80%, but the ultimate shear strain decreases up to 55%. The failure mode is discussed for the two types of the fabrication procedure.

Keywords

Cork based composites, ceramic matrix composites (CMCs), joints/joining, thermo-mechanical, aerospace

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