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EFFECT OF PYROLYTIC CARBON INTERFACE ON PERFORMANCE OF C/C COMPOSITE

Abstract

Carbon fiber-reinforced carbon matrix composite (C/C composite) possess such a high strength, toughness, self-lubricating capability, excellent thermal conductivity and extremely low coefficient of thermal expansion at high temperatures that they are ideal choice for a number of aerospace applications including space structural material of space telescope or reflector, and sealing material of engine in the extreme environment. In order to study the effect of carbon matrix structure on the performance, the C/C composite with pyrolytic carbon interface and pitch derived carbon, which were prepared by CVI and HPIC, were compared to pure pitch derived carbon matrix. The results indicated that the mechanical performance of the C/C composite increased as the bonding strength of the fiber/matrix interface was improved by pyrolytic carbon. The tensile strength in Z directions increased 6.7