The studies on the infiltration by CVI and the modeling calculation in the preparation of C/C composites

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The C/C composites were produced by the Chemical Vapor Infiltration (CVI) of propane gases in this study. The purpose of this study is to eventually improve the properties of carbon fibers by the pyrolysis carbon deposited on the lateral surfaces of carbon fibers in the layered preform. The amount of deposited carbon and the compositions of the exit gas after the deposition reaction were measured. 5% propane gas in N_2 flowing 1.5cc/min was used for deposition in a cubic carbon perform at 1173K ~ 1233K for 3,6,9,12, and 18 hours. The total pressure was maintained at 30 torr during the reaction. . Changes of the shapes of deposited carbon in the pores of preform were confirmed by SEM photos. Afterwards, the numerical modeling of the deposition of pyrolysis carbon was performed. The results of the simulation of the system with the deposition rate constant from the reference estimated the experimental results well.