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# THE RELATIONSHIP BETWEEN MICROSTRUCTURE OF SIC COATING AND TENSILE STRENGTH OF CVD-SIC FIBERS

**Abstract**

Silicon carbide (SiC) fibers with carbon core were fabricated by resistively heated cold-wall chemical vapour deposition (CVD). Scanning electron microscopy and Raman spectra were used to characterize the microstructure of SiC coatings. Tensile strength of fibers was tested. The effects of the microstructure and thickness of SiC coatings on the tensile strength of fibers were discussed. At the temperature between 1000 and 1200 °C, the tensile strength of fibers increases initially and then decreases with the rise of thickness of SiC coatings. The corresponding maximum of tensile strength of fibers increases with the rise of temperature. Both the thickness and microstructure of SiC coatings affect the tensile strength of fibers. Combining the law of mixture and weakest-link statistics, it can be concluded that the SiC coating with high tensile strength and Weibull modulus is favorable for obtaining CVD-SiC fibers with high tensile strength. The thickness of SiC coating corresponds to the maximum tensile strength of CVD-SiC fibers increases accordingly.