NEW BN COATING ON SIC FIBERS AS THE INTERPHASE OF SIC/SIC COMPOSITES

Takahiro Sekigawa, Mitsubishi Heavy Industries Aero Engines, Japan
takahiro.sekigawa.27@mhi.com
Mitsuhiko Sato, Tokyo University of Technology, Japan

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Future gas turbine engines are aimed for higher efficiency with lower exhaust emissions. Efficiency of the gas turbine engine increases with an increase in turbine inlet temperature. Current Nickel based super-alloys are operating at their maximum temperatures and cannot withstand an increase in temperature. Ceramic matrix composites (CMCs) are one of the best candidate materials because of their low weight and high temperature capability. In order to successfully implement CMCs in gas turbine engines, SiC/SiC composites composed of SiC fibers, BN interface, and SiC matrix have been developing.

The BN interface phase is generally produced on SiC fibers by chemical vapor deposition (CVD) using BCl_3 and NH_3 gas as raw materials. However, the degradation of SiC fiber has been a problem in this process.
This paper focuses on improvement of BN coating and the validity of B-N precursor as a raw material in CVD method was investigated. Good quality BN-coating layers were obtained by CVD method using pyrolysis gas of B-N precursor and less degradation of SiC fiber after new BN-coating by B-N precursor was observed than that of conventional BN coating.

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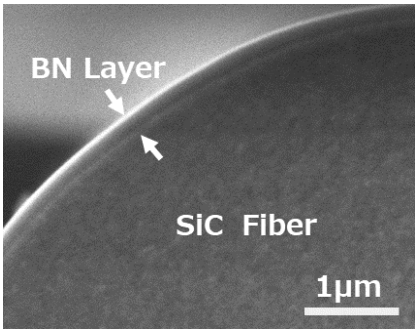

Figure 1 – SEM Photograph of new BN coating on SiC fiber.

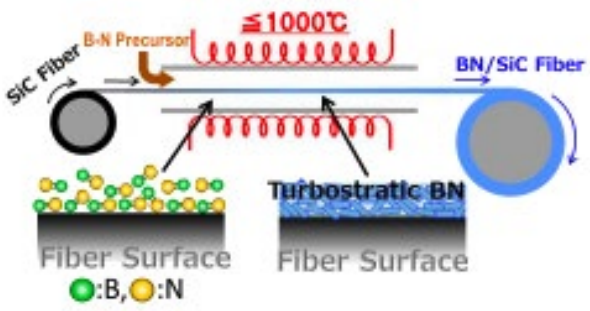

Figure 2 – Schematic diagram of BN-coating method on SiC fiber by chemical vapor deposition.