

干法纺丝法制备低氧含量SiC纤维

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摘要 通过粘度、凝胶含量和XRD等手段研究了聚碳硅烷(PCS)

纺丝原液的干法纺丝性能和干纺PCS纤维的自交联过程, 并对所制得的低氧含量SiC纤维的组成、结构和性能进行了表征. 结果表明, PCS/二甲苯纺丝原液的最佳纺丝粘度范围在18.0~22.0Pa·s;

干纺PCS纤维在烧成温度超过250℃后开始发生自交联反应, 在烧成温度超过550℃后,

干纺PCS纤维完全交联形成了“不熔不溶”的网状结构;

干法纺丝法制备得到的SiC纤维与空气不熔化法制得的SiC纤维相比, 氧含量大幅降低, 仅在3.6wt%左右, 结晶度较高, 其耐高温抗氧化性也有明显的改善.

关键词 [干法纺丝](#) [聚碳硅烷](#) [SiC](#) [纤维](#)

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Preparation of Low Oxygen SiC Fiber by Dry Spinning

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Abstract Dry spinning performance of PCS solution and self crosslinking process of the PCS fiber as-spun were studied by viscosity, gel content and XRD techniques. The composition, structure and mechanical properties of SiC fibers were also characterized. Results show that the optimum spinning viscosity of PCS/xylene solution is 18.0-22.0Pa·s, self crosslinking process of the PCS fiber by dry-spun begins at 250℃ during pyrolysis process, and finishes at 550℃ to form a network structure which does not melt or dissolve. The oxygen content of the final SiC fibers is decreased to about 3.6wt%. SiC fibers prepared by dry spinning have a better β -SiC microcrystalline structure and show better oxidation resistance than those prepared by the oxidation curing.

Key words [dry spinning](#) [polycarbosilane](#) [SiC](#) [fiber](#)

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