Conference: Proceedings Volume 37, Issue Part 2, Pages 119 - 1212020 International Conference on Newer trends and Innovations in Mechanical Engineering, ICONTIME 2020 Trichy, Tamil Nadu 27 March 2020through 28 March 2020 Code 145098

Microwave synthesis of silicon carbide nanowhiskers: Effect of molar ratio

Absract

Silicon carbide (SiC) is an attractive material for its excellent properties such as wide band gap, high chemical stability and thermal conductivity. The conventional methods for the preparation of SiC are time and energy consuming. In this paper, SiC nanowhiskers were synthesized by utilizing microwave heating. Mixture of graphite and silica of various ratio was heated to 1400 °C for 30 min at a heating rate of 20 °C/min. It was found that almost complete conversion of graphite and silica to silicon carbide nanowhiskers was observed for sample of mixture in the ratio of 1:3. Vapor-solid mechanism was suggested to explain the formation of SiC nanowhiskers.

Keywords

Graphite; Heating; Microwave; Nanowhiskers; Silicon carbide; Vapor-solid mechanism