

Paralysis of Silicon Carbide using the Layered Silicate

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Silicon carbide is mostly synthesized for use as an abrasive, a semiconductor and gemstones. The manufacturing process is to combine silica sand and carbon at high temperature between 1600 °C and 2500 °C. Alpha silicon carbide (α -SiC) is most common, and is formed under 2000°C. Alpha SiC has the typical hexagonal crystal structure. Beta modification (β -SiC), with a face-centered cubic crystal structure, is formed above 2000°C. The purpose of this paper is to synthesize the silicon carbide at low temperature using kenyaite as template. Silicon carbide was prepared by the pyrolysis of PFO (pyrolyzed fuel oil) with catalyst of cobalt compound in interlayer space of kenyaite. Pyrolysis was conducted for 3hr at 1100-1350 oC. The results indicate that silicon carbide is synthesized at low temperature. Silicon carbide was well crystallized with increase of temperature. The results show that cobalt acts as a promotion catalyst for silicon carbide formation.